**Contents of Appendix for**

***Gestational diabetes mellitus and adverse pregnancy outcomes: a systematic review and meta-analysis***

**Supplemental Table S1. Search strategy in PubMed**

| No. | Subjects | Terms |
|---|---|---|
| 1 | Gestational diabetes mellitus | gestational hyperglycemia |
| | | gestational diabete* |
| | | gestational glucose |
| | | pregnancy hyperglycemia |
| | | pregnancy diabete* |
| | | pregnancy glucose |
| | | maternal hyperglycemia |
| | | maternal diabete* |
| | | maternal glucose |
| 2 | Diagnostic criteria for GDM | IADPSG |
| | | DIPSI |
| | | ADIPS |
| | | NDDG |
| | | Carpenter Coustan |
| 3 | Adverse pregnancy outcomes | pregnan* outcome* |
| | | adverse pregnan* outcome* |
| | | obstetric* complicat* |
| | | pregnan* disorder* |
| | | obstetric* outcome* |
| 4 | Maternal outcomes | Spontaneous miscarriage |
| | | Pregnancy loss |
| | | Antepartum hemorrhage |
| | | Post-partum hemorrhage |
| | | Induction of labour |
| | | Instrumental birth |
| | | Caesarean section |
| | | Shoulder dystocia |
| | | Hypertensi* |
| | | Pre-eclampsia |
| | | Eclampsia |
| | | Placenta previa |
| | | Placental abruption |
| | | Premature rupture of membrane |
| | | Infection |
| | | Amniotic embolism |
| | | Hyperemesis gravidarum |
| 5 | Fetal / neonatal outcomes | mortality |
| | | death |
| | | stillbirth |
| | | congenital |
| | | malformation |

| | | |
|---|---|---|
| | | anomaly |
| | | impair* |
| | | disabilit* |
| | | prematur* |
| | | preter* |
| | | macrosomia |
| | | low birth weight |
| | | lbw |
| | | large for gestational age |
| | | LGA |
| | | small for gestational age |
| | | SGA |
| | | neonatal hypoglyc* |
| | | neonatal hyperbili* |
| | | jaundice |
| | | respiratory distress syndrome |
| | | RDS |
| | | hyaline membrane disease |
| | | HMD |
| | | Apgar |
| | | asphyxia |
| | | apnoea |
| | | neonatal intensive care unit |

Search strategy: (1 OR 2) AND (3 OR 4 OR 5).

**Supplemental Table S2. Recommended and adopted diagnostic criteria for GDM in the studies included in our review.**

| Criteria for diagnosis of GDM | OGTT load (g) | Fasting (mmol/l) | 1h post load (mmol/l) | 2h post load (mmol/l) | 3h post load (mmol/l) | Abnormal values required when diagnosing GDM (n) |
|---|---|---|---|---|---|---|
| O'Sullivan (1964) | 100 | ≥5.0 | ≥9.2 | ≥8.1 | ≥6.9 | 2 |
| NDDG (1979), ADA (1980), WHO (1980), the 2nd/3rd IWC | 100 | ≥5.8 | ≥10.6 | ≥9.2 | ≥8.0 | 2 |
| **ACOG, C&C (1982), ADA (1982/2000/2007), the 4th IWC** | 100 | ≥5.3 | ≥10.0 | ≥8.6 | ≥7.8 | 2 |
| EASD (1996) | 75 | ≥6.0 | - | ≥9 | | 1 |
| ADIPS (1998) | 75 | ≥5.5 | - | ≥8.0 | - | 1 |
| NZSSD (1998) | 75 | ≥5.5 | - | ≥9 | - | 1 |
| **WHO (1999)** | 75 | ≥7.0 | - | ≥7.8 | - | 1 |
| NICE | 75 | ≥5.6 | - | ≥7.8 | - | 1 |
| ADA (2006) | 75 | ≥5.3 | ≥10.0 | ≥8.6 | - | 1 |
| DIPSI (2009) | 75 | - | - | ≥7.8 | - | 1 |
| **IADPSG (2010), ADIPS (2013), WHO (2013)** | 75 | ≥5.1 | ≥10.0 | ≥8.5 | - | 1 |
| CDA (2013) | 75 | ≥5.3 | ≥10.6 | ≥9.0 | - | 1 |

Note: The main criteria used for subgroup analysis were set in bold, including CC, WHO1999, and IADPSG. Criteria including the CDA, NZSSD, DIPSI, and other uncommon local criteria were classified them as “other”, due to the relatively small number of studies adopting these criteria.

Abbreviations:

ACOG: American College of Obstetricians and Gynecologists;

ADA: American Diabetes Association;

ADIPS: Australasian Diabetes in Pregnancy Society;

CDA: Canadian Diabetes Association;

C&C: Carpenter & Coustan criteria;

DIPSI: Diabetes in Pregnancy Study group in India;

IADPSG: International Association of Diabetes and Pregnancy Study Groups;

NDDG: National Diabetes Data Group;

NZSSD: New Zealand Society for the Study of Diabetes;

OGTT: Oral glucose tolerance test;

WHO: World Health Organization.

**Supplemental Table S3. Definitions of adverse pregnancy outcomes in our review.**

| Outcomes | Abbreviations / Synonyms | Definition | Reference |
|---|---|---|---|
| **Maternal outcomes** | | | |
| Pre-eclampsia | PE | De novo hypertension after gestational week 20 and the coexistence of one or more of the following new onset conditions:<br>1. Proteinuria (spot urine protein/creatinine ratio >=30 mg/mmol (0.3 mg/mg) or >=300 mg/day or at least 1g/L (2+) on dipstick testing )<br>2. Other maternal organ dysfunction:<br>-Renal insufficiency (creatinine >=0.09 umol/L:1.02 mg/dL)<br>-Liver involvement (elevated transaminases:at least twice upper limit of<br>normal +/minus right upper quadrant or epigastric abdominal painand/or severe right upper quadrant or epigastric pain)<br>-Neurological problems: convulsions (eclampsia), hyperreflexia with clonus, severe headaches with hyperreflexia, persistent visual disturbances (scotoma)<br>-Hematological disturbances: thrombocytopenia, disseminated intravascular coagulation, hemolysis<br>-Fetal growth restriction | The classification, diagnosis and management oft he hypertensive disorders of pregnancy: A revised statement from the ISSHP. Pregnancy Hypertension: An International Journal of Women‘s Cardiovascular Health 4 |
| Induction | - | Labor induction is the use of medications or other methods to bring on (induce) labor. | ACOG FAQ154 Labor, delivery and postpartum care. http://www.acog.org/~/media/For%20Patients/faq154.pdf?dmc=1&ts=20140330T1604067485 |

| | | | |
|---|---|---|---|
| Instrumental delivery | Assisted delivery | A vagina delivery assisted by either a vacuum or forceps to the fetal head | ACOG FAQ154 Labor, delivery and postpartum care. http://www.acog.org/~/media/For%20Patients/faq154.pdf?dmc=1&ts=20140330T1604067485 |
| Cesarean section | C-section | Extraction of the fetus(es) through an abdominal incision in a woman | American College of Gynecologists FAQ 006. www.acog.org/~/media/For%20Patients/faq006.pdf?dmc=1&ts=20140330T1631095454 |
| Shoulder dystocia | - | The mechanical inability to deliver the anterior fetal shoulder after delivery of the fetal head, which requires additional obstetric maneuvers following failure of gentle downward traction on the fetal head to effect delivery of the shoulders including one or more of the following:<br>suprapubic pressure, McRoberts maneuver, Wood‘s screw maneuver or Rubin‘s maneuvers, delivery of the posterior arm, the Gaskin maneuver the Zavanelli maneuver, or intentional fracture of the clavicle or humerus | ACOG Committee on Practice Bulletins-Gynecology, The American College of Obstetrician and Gynecologists. ACOG practice bulletin clinical management guidelines for obstetrician-gynecologists. Number 40, November 2002. Obstet Gynecol. 2002 Nov;100(5 Pt 1):1045-50. |
| Premature rupture of membrane | PROM | Intrapartum spontaneous rupture of membranes | Consensus |
| Postpartum hemorrhage | PPH | A blood loss of 500 ml or more within 24 hours after birth | WHO recommendations on prevention and treatment of postpartum haemorrhage. 2012. |
| **Neonatal outcomes** | | | |
| Stillbirth | - | Death of a fetus after the 20th week of pregnancy, before or during birth | Management of Stillbirth. ACOG Practice Bulletin Number 102, Obstet Gynecol 2009;113:748–61. |
| Neonatal death | - | The death of a live born infant within the first 28 days of life | Barfield WD and the COMMITTEE ON FETUS AND NEWBORN. American Academy of Pediatrics. Clinical |

| | | | |
|---|---|---|---|
| | | | Reports_ Standard terminology for fetal, infant and perinatal deaths. Pediatrics 2011;128(1): 177-181 |
| Congenital malformation | CM | Intrauterine structural or functional anomalies | https://www.who.int/health-topics/congenital-anomalies#tab=tab_1 |
| Preterm delivery | - | Babies born at <37 weeks gestational age | https://www.who.int/news-room/fact-sheets/detail/preterm-birth |
| Macrosomia | - | Birth weight greater than or equal to 4000 g | Macrosomia: ACOG Practice Bulletin, Number 216. Obstet Gynecol. 2020;135(1):e18-e35. doi:10.1097/AOG.0000000000003606 |
| Large for gestational age | LGA | Birth weight that is above the 90th percentile for gestational age | Consensus |
| Low birth weight | LBW | Birth weight less than 2500 g | https://apps.who.int/iris/bitstream/handle/10665/43184/9280638327.pdf;sequence=1 |
| Small for gestational age | SGA | Birth weight that is below the 10th percentile for gestational age | Consensus |
| Respiratory distress syndrome | RDS | A breathing disorder that affects newborns when their lungs are unable to make enough surfactant, causing breathing difficulties | https://www.nhlbi.nih.gov/health-topics/respiratory-distress-syndrome |
| Low 1 (5)-min Apgar score | Low 1 (5)-AS | 1 (5)-min Apgar score <7.<br>Apgar score: A measure of the health of a newborn infant done at 1 minute and 5 minutes. The newborn is given points (0, 1, 2) for heart rate, respiratory effort, muscle tone, response to stimulation, and skin coloration. A score of 10 points indicates excellent health. | Apgar V. Proposal for new method of evaluation of newborn infant. Anesth Analg 1953;32:260-7. |
| Neonatal hypoglycemia | - | A blood glucose value is 40 mg/dL (2.22 mmol/L) or lower within the first 4 hours of age, or that is 45 mg/dL (2.50 mmol/L) or lower during 4-24 hours of age | Adamkin DH; Committee on Fetus and Newborn. Postnatal glucose homeostasis in late-preterm and term infants. Pediatrics. 2011;127(3):575–579 |

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|---|---|---|---|
| Neonatal jaundice | - | Yellow discoloration of the skin and sclera of a neonate due to increased levels of bilirubin in the blood, or need for phototherapy | https://www.euro.who.int/__data/assets/pdf_file/0010/146818/EPC_participants_neonatology.pdf |
| NICU admission | - | - | Consensus |

Note: We refer to the paradigm proposed by the IADPSG (International Association of Diabetes and Pregnancy Study Groups) working group for the definition of several outcomes. [International Association of Diabetes in Pregnancy Study Group (IADPSG) Working Group on Outcome Definitions, Feig DS, Corcoy R, et al. Diabetes in pregnancy outcomes: a systematic review and proposed codification of definitions. Diabetes Metab Res Rev. 2015;31(7):680-690. doi:10.1002/dmrr.2640]

**Supplemental Table S4. Modified Newcastle-Ottawa Quality Assessment Scale**

Note: A study can be awarded a maximum of one star for each numbered item within the Selection and Outcome categories. A maximum of two stars can be given for Comparability.

**3.1 Selection**

1) Representativeness of the exposed population

a) truly representative of the average prevalence of gestational diabetes in the community ✸

b) somewhat representative of the average prevalence of gestational diabetes in the community ✸

c) selected group of users such as nurses, obese women, pregnant women with high risks for GDM, etc.

d) no description of the derivation of the cohort

2) Selection of the non-exposed population

a) drawn from the same community as the exposed population ✸

b) drawn from a different source

c) no description of the derivation of the non-exposed population

3) Ascertainment of exposure

a) defined diagnostic criteria for GDM ✸

b) structured interview

c) written self-report

d) no description

4) Demonstration that outcome of interest was not present at start of study

a) yes ✸

b) no

**3.2. Comparability**

1) Comparability of cohorts based on the design or analysis

a) study controls for three or more confounders ✸✸

b) study controls for two or more confounders ✸

c) study controls for no confounder

Confounders including maternal age, pregestational body mass index (BMI), gestational weight gain (GWG), smoking history (status), gravity, parity, and chronic hypertension.

**3.3. Outcome**

1) Assessment of outcome

a) independent blind assessment ✸

b) record linkage ✸

c) self-report

d) no description

2) Was follow-up long enough for outcomes to occur

a) yes ✸

b) no

3) Adequacy of follow up of cohorts

a) complete follow up - all subjects accounted for ✸

b) subjects lost to follow up unlikely to introduce bias - small number lost - >90% follow up, or description provided of those lost ✸

c) follow up rate <90% and no description of those lost

d) no statement

**Supplemental Table S5. Key excluded studies**

| Study | Reason for Exclusion | Title |
|---|---|---|
| Abdelgadir2003 | Small sample size | Factors affecting perinatal morbidity and mortality in pregnancies complicated by diabetes mellitus in Sudan |
| Aberg2001 | Limitation on subjects | Impaired glucose tolerance associated with adverse pregnancy outcome: A population-based study in southern Sweden |
| Adams1998 | Conducted prior to 1990 | Sequelae of unrecognized gestational diabetes |
| Agbozo2019 | Grey literature (biorxiv) | Gestational diabetes using diverse diagnostic criteria, risk factors including dietary intakes, pregnancy outcomes and postpartum glycemic status: a nested case-control study in Ghana |
| Aguilera2020 | Cross-sectional study | Paired maternal and fetal cardiac functional measurements in women with gestational diabetes mellitus at 35-36 weeks' gestation |
| Akhlaghi2012 | Small sample size | A Comparative Study of Relationship between Micronutrients and Gestational Diabetes |
| Aktün2015 | Limitation on subjects | Gestational diabetes mellitus screening and outcomes |
| Alfadhli2015 | Replicated cohort | Gestational diabetes in Saudi women identified by the International Association of Diabetes and Pregnancy Study Group versus the former American Diabetes Association criteria: a prospective cohort study |
| Alfadhli2015 | Small sample size | Gestational diabetes among Saudi women: prevalence, risk factors and pregnancy outcomes |
| Alkaabi2020 | Limitation on subjects | Burden, associated risk factors and adverse outcomes of gestational diabetes mellitus in twin pregnancies in Al Ain, UAE |
| Al-Khalifah2012 | Limitation on subjects | Neonatal Short-Term Outcomes of Gestational Diabetes Mellitus in Saudi Mothers: A Retrospective Cohort Study |
| Almarzouki 2013 | Small sample size | Maternal and neonatal outcome of controlled gestational diabetes mellitus versus high risk group without gestational diabetes mellitus: a comparative study |
| Alverson2011 | Case-control study | Maternal Smoking and Congenital Heart Defects in the Baltimore-Washington Infant Study |
| Arbib2016 | Small sample size | Third trimester abnormal oral glucose tolerance test and adverse perinatal outcome |
| Avalos2013 | Replicated cohort (ATLANTIC DIP) | Applying current screening tools for gestational diabetes mellitus to a European population: is it time for change? |
| Aviram2015 | Limitation on subjects | Pregnancy outcome in pregnancies complicated with gestational diabetes mellitus and late preterm birth |
| Badakhsh2012 | Conducted prior to 1990 | A thirty-year analysis of cesarean section rate in gestational diabetes and normal pregnant population in Tehran, Iran: a concerning trend |
| Bánhidy2010 | Case-control study | Congenital abnormalities in the offspring of pregnant women with type 1, type 2 and gestational diabetes mellitus: A population-based case-control study |

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| Barakat2013 | Small sample size | Exercise during pregnancy and gestational diabetes-related adverse effects: a randomised controlled trial |
| Barat2018 | Cross-sectional study | Triglyceride to HDL cholesterol ratio and risk for gestational diabetes and birth of a large-for-gestational-age newborn |
| Bartáková2017 | Not English | [Pregnancy outcomes in women with gestational diabetes: specific subgroups might require increased attention] |
| Bashir2018 | Replicated cohort | Prevalence of newly detected diabetes in pregnancy in Qatar, using universal screening |
| Battarbee2020 | No defined diagnosis criteria | The association of pregestational and gestational diabetes with severe neonatal morbidity and mortality |
| Becquet2015 | Limitation on subjects | Insulin treatment of maternal diabetes mellitus and respiratory outcome in late-preterm and term singletons |
| Beischer1996 | Conducted prior to 1990 | Identification and Treatment of Women with Hyperglycaemia Diagnosed During Pregnancy Can Signiscantly Reduce Perinatal Mortality Rates |
| Bener2011 | No defined diagnosis criteria | Prevalence of gestational diabetes and associated maternal and neonatal complications in a fast-developing community: global comparisons |
| Berezowsky2021 | No GDM (only abnormal GCT screening) | Abnormal glucose challenge test in absence of oral glucose tolerance test - are there consequences? |
| Berkowitz1992 | Conducted prior to 1990 | Maternal characteristics, neonatal outcome, and the time of diagnosis of gestational diabetes |
| Berkus1995 | Conducted prior to 1990 | Efficiency of Lower Threshold Criteria for the Diagnosis of Gestational Diabetes |
| Billionnet2017 | Diagnosis based on ICD codes | Gestational diabetes and adverse perinatal outcomes from 716,152 births in France in 2012 |
| Black2010 | No data | Clinical Outcomes of Pregnancies Complicated by Mild Gestational Diabetes Mellitus Differ by Combinations of Abnormal Oral Glucose Tolerance Test Values |
| Black2013 | Replicated cohort (KPSC) | The Relative Contribution of Prepregnancy Overweight and Obesity, Gestational Weight Gain, and IADPSG-Defined Gestational Diabetes Mellitus to Fetal Overgrowth |
| Bo2004 | Small sample size | Mild gestational hyperglycemia, the metabolic syndrome and adverse neonatal outcomes. |
| Boghossian2014 | Diagnosis based on ICD codes | Changes in diabetes status between pregnancies and impact on subsequent newborn outcomes |
| Boghossian2016 | No defined diagnosis criteria | Outcomes of Extremely Preterm Infants Born to Insulin-Dependent Diabetic Mothers |
| Boriboonhirunsarn2016 | Limitation on subjects | Emergency cesarean section rate between women with gestational diabetes and normal pregnant women |
| Boriboonhirunsarn2019 | No GDM (only abnormal GCT screening) | Relationship between 50-g glucose challenge test and large for gestational age infants among pregnant women without gestational diabetes |
| Brankica2016 | Small sample size | Maternal 75-g OGTT glucose levels as predictive factors for large-forgestational age newborns in women with gestational diabetes mellitus |
| Brans1983 | Conducted prior to 1990 | Maternal diabetes and neonatal macrosomia. III. Neonatal body water estimates |

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| Bricelj2016 | Limitation on subjects | Neonatal respiratory morbidity in late-preterm births in pregnancies with and without gestational diabetes mellitus |
| Bryson2003 | Case-control study | Association between gestational diabetes and pregnancy-induced hypertension |
| Capobianco2020 | Other types of diabetes were not excluded | Materno-Fetal and Neonatal Complications of Diabetes in Pregnancy: A Retrospective Study |
| Capula2013 | Limitation on subjects | Gestational Diabetes Mellitus: Screening and Outcomes in Southern Italian Pregnant Women |
| Carr2010 | Conducted prior to 1990 | Gestational Diabetes or Lesser Degrees of Glucose Intolerance and Risk of Preeclampsia |
| Carr2011 | Conducted prior to 1990 | Gestational diabetes or lesser degrees of glucose intolerance and risk of preeclampsia |
| Celik2013 | Small sample size | Association of low maternal levels of salusins with gestational diabetes mellitus and with small-for-gestational-age fetuses |
| Challis2002 | Case-control study | Gestational diabetes mellitus and fetal death in Mozambique: an incident case-referent study |
| Chastang2003 | No data | Comparison of two diagnostic tests for gestational diabetes in predicting macrosomia |
| Chen2017 | No data | Maternal and neonatal outcomes of pregnancy at 39 weeks and beyond with mild gestational diabetes mellitus |
| Chen2020 | Conducted prior to 1990 | Association of maternal diabetes with neurodevelopmental disorders: autism spectrum disorders, attention-deficit/hyperactivity disorder and intellectual disability |
| Cheng2006 | Conducted prior to 1990 | Screening or diagnostic: markedly elevated glucose loading test and perinatal outcomes |
| Cheng2009 | Conducted prior to 1990 | Carpenter-Coustan Criteria Compared With the National Diabetes Data Group Thresholds for Gestational Diabetes Mellitus |
| Chi2018 | Small sample size | Impact of adopting the 2013 World Health Organization criteria for diagnosis of gestational diabetes in a multi-ethnic Asian cohort: a prospective study |
| Claesson2007 | Conducted prior to 1990 | Abnormal fetal growth is associated with gestational diabetes mellitus later in life: population-based register study |
| Clausen2013 | No control | Cognitive Function in Adult Offspring of Women with Gestational Diabetes–The Role of Glucose and Other Factors |
| Collier2016 | Conducted prior to 1990 | reported prevalence of Gestational Diabetes in Scotland: the relationship to obesity, age, socioeconomic status, smoking and macrosomia and how many are we missing? |
| Cordero2015 | Limitation on subjects | Neonatal outcomes of macrosomic infants of diabetic and non-diabetic mothers |
| Correa2008 | Case-control study | Diabetes mellitus and birth defects |
| Cosson2020 | Other types of diabetes were not excluded | Performance of a selective screening strategy for diagnosis of hyperglycaemia in pregnancy as defined by IADPSG/WHO criteria |

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| Csa´ky-Szunyogh2014 | Case-control study | Risk Factors in the Origin of Congenital Left-Ventricular Outflow-Tract Obstruction Defects of the Heart: A Population-Based Case–Control Study |
| Cynthia2011 | No defined diagnosis criteria | What is the impact of diabetes for Australian Aboriginal women when pregnant? Diabetes research and clinical practice |
| Damm1989 | Conducted prior to 1990 | Significant decrease in congenital malformations in newborn infants of an unselected population of diabetic women |
| Dart2015 | Case-control study | Maternal Diabetes Mellitus and Congenital Anomalies of the Kidney and Urinary Tract (CAKUT) in the Child |
| Das2009 | Limitation on subjects | Neonatal outcomes of macrosomic births in diabetic and non-diabetic women |
| Dave2021 | Limitation on subjects | Perinatal outcomes in twin pregnancies complicated by gestational diabetes |
| Deerochanawong1996 | Unknown study duration | Comparison of National Diabetes Data Group and World Health Organization criteria for detecting gestational diabetes mellitus |
| Deryabina2016 | Limitation on subjects | Perinatal outcome in pregnancies complicated with gestational diabetes mellitus and very preterm birth: case–control study |
| Di Cianni1996 | Not availiable | Neonatal outcome and obstetric complications in women with gestational diabetes: effects of maternal body mass index. |
| Di1996 | Conducted prior to 1990 | Neonatal outcome and obstetric complications in women with gestational diabetes: effects of maternal body mass index |
| Dinham2016 | Limitation on subjects | Twin pregnancies complicated by gestational diabetes mellitus: a single centre cohort study. |
| Dionne2008 | No defined diagnosis criteria | Gestational Diabetes Hinders Language Development in Offspring |
| Djomhou2016 | Small sample size | Maternal hyperglycemia during labor and related immediate post-partum maternal and perinatal outcomes at the Yaoundé Central Hospital, Cameroon |
| Dudhbhai2006 | Small sample size | Characteristics of patients with abnormal glucose challenge test and normal oral glucose tolerance test results: Comparison with normal and gestational diabetic patients |
| Dunn1964 | No defined diagnosis criteria | CONGENITAL MALFORMATIONS AND MATERNAL DIABETES |
| Dyck2002 | Replicated cohort | A comparison of rates, risk factors, and outcomes of gestational diabetes between aboriginal and non-aboriginal women in the Saskatoon health district |
| Dyck2020 | Conducted prior to 1990 | Epidemiology of Diabetes in Pregnancy Among First Nations and Non-First Nations Women in Saskatchewan, 1980–2013 |
| Easmin2015 | Not availiable | Obstetric Outcome in Early and Late Onset Gestational Diabetes Mellitus. |
| Ehmann2019 | No data | Are the changes in diagnostic criteria for gestational diabetes mellitus reflected in perinatal outcomes? A retrospective assessment |
| Esakoff2009 | Conducted prior to 1990 | The association between birthweight 4000 g or greater and perinatal outcomes in patients with and without gestational diabetes mellitus |
| Eslamian2013 | Small sample size | Effect of different maternal metabolic characteristics on fetal growth in women with gestational diabetes mellitus |

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| Ezell2015 | No GDM (only abnormal GCT screening) | Association between Prenatal One-Hour Glucose Challenge Test Values and Delivery Mode in Nondiabetic, Pregnant Black Women |
| Ezimokhai2006 | Other types of diabetes were not excluded | Audit of pregnancies complicated by diabetes from one center five years apart with selective versus universal screening |
| Fadl2010 | Diagnosis based on ICD codes | Maternal and neonatal outcomes and time trends of gestational diabetes mellitus in Sweden from 1991 to 2003 |
| Feig2014 | Diagnosis based on ICD codes | Trends in Incidence of Diabetes in Pregnancy and Serious Perinatal Outcomes: A Large, Population-Based Study in Ontario, Canada, 1996–2010 |
| Feldman2016 | No control | Gestational Diabetes Screening: The International Association of the Diabetes and Pregnancy Study Groups Compared With Carpenter-Coustan Screening |
| Ferrara2007 | Case-control study | Pregnancy plasma glucose levels exceeding the American Diabetes Association thresholds, but below the National Diabetes Data Group thresholds for gestational diabetes mellitus, are related to the risk of neonatal macrosomia, hypoglycaemia and hyperbilirubinaemia |
| Foeller2015 | Limitation on subjects | Neonatal outcomes in twin pregnancies complicated by gestational diabetes compared with non-diabetic twins. |
| Fraser1990 | Conducted prior to 1990 | Factors influencing birth weight in newborns of diabetic and non-diabetic women. A population based study. |
| Fraser1994 | Conducted prior to 1990 | Gestational diabetes among Bedouins in southern Israel: comparison of prevalence and neonatal outcomes with the Jewish population |
| Freitas2019 | Small sample size | Comparison of Maternal and Fetal Outcomes in Parturients With and Without a Diagnosis of Gestational Diabetes |
| Frı´as2007 | No defined diagnosis criteria | Infrequently Studied Congenital Anomalies as Clues to the Diagnosis of Maternal Diabetes Mellitus |
| Fung2014 | Limitation on subjects | Does gestational diabetes mellitus affect respiratory outcome in late-preterm infants? |
| Gasim2012 | Small sample size | Gestational Diabetes Mellitus: Maternal and Perinatal Outcomes in 220 Saudi Women |
| Gazzolo1995 | Small sample size | Doppler velocimetry and behavioural state development in relation to perinatal outcome in pregnancies complicated by gestational diabetes |
| Glaharn2020 | Small sample size | Proportion of abnormal second 50-g glucose challenge test in gestational diabetes mellitus screening using the two-step method in high-risk pregnant women |
| Godwin1999 | Conducted prior to 1990 | Prevalence of gestational diabetes mellitus among Swampy Cree women in Moose Factory, James Bay |
| Gonzalez2012 | Limitation on subjects | Obstetric and perinatal outcome in women with twin pregnancy and gestational diabetes. |
| Gorgal2012 | Conducted prior to 1990 | Gestational diabetes mellitus: a risk factor for non-elective cesarean section |
| Gortazar2021 | Limitation on subjects | Trends in Prevalence of Diabetes among Twin Pregnancies and Perinatal Outcomes in Catalonia between 2006 and 2015: The DIAGESTCAT Study |

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| Grandi2015 | Limitation on subjects | Impact of maternal diabetes mellitus on mortality andmorbidity of very low birth weight infants: amulticenter Latin America study |
| Greco1994 | Small sample size | Does gestational diabetes represent an obstetrical risk factor? Gynecologic and obstetric investigation |
| Groof2019 | No defined diagnosis criteria | Prevalence, Risk Factors, and Fetomaternal Outcomes of Gestational Diabetes Mellitus in Kuwait: A Cross-Sectional Study |
| Gualdani2021 | Diagnosis based on ICD codes | Pregnancy outcomes and maternal characteristics in women with pregestational and gestational diabetes: a retrospective study on 206,917 singleton live births |
| Guillen2014 | Limitation on subjects | Influence of gestational diabetes mellitus on neonatal weight outcome in twin pregnancies |
| Günter2006 | Not English | [Perinatal morbidity in pregnancies of women with preconceptional and gestational diabetes mellitus in comparison with pregnancies of non-diabetic women |
| Guy 2017 | Small sample size | Effect of Gestational Diabetes Mellitus on Macrosomia Infants |
| Hakanen2016 | Conducted prior to 1990 | Mothers with gestational diabetes are more likely to give birth to children who experience early weight problems |
| Han2015 | Small sample size | Association of adiponectin gene polymorphism 45TG with gestational diabetes mellitus diagnosed on the new IADPSG criteria, plasma adiponectin levels and adverse pregnancy outcomes |
| Heckbert1988 | Conducted prior to 1990 | Diabetes in pregnancy: maternal and infant outcome |
| Henry1993 | Conducted prior to 1990 | Gestational diabetes and follow-up among immigrant Vietnam-born women |
| Herman2017 | Small sample size | Trial of labor after cesarean delivery for pregnancies complicated by gestational diabetes mellitus |
| Hiersch2018 | Limitation on subjects | Gestational diabetes mellitus is associated with adverse outcomes in twin pregnancies |
| Hildén2020 | No data | Trends in pregnancy outcomes for women with gestational diabetes mellitus in Sweden 1998-2012: a nationwide cohort study |
| Hitaka2019 | Limitation on subjects | Neonatal outcomes of very low birthweight infants born to mothers with hyperglycaemia in pregnancy: a retrospective cohort study in Japan |
| Hoang2017 | Case-control study | Original Findings and Updated Meta-Analysis for the Association Between Maternal Diabetes and Risk for Congenital Heart Disease Phenotypes |
| Hod1991 | No data | Gestational diabetes mellitus. A survey of perinatal complications in the 1980s. |
| Hod1996 | Conducted prior to 1990 | Perinatal complications following gestational diabetes mellitus how ‘sweet’ is ill? |
| Hod2019 | Replicated cohort | Evidence in support of the International Association of Diabetes in Pregnancy study groups' criteria for diagnosing gestational diabetes mellitus worldwide in 2019 |
| Hosseini2018 | No data | Incidence, risk factors, and pregnancy outcomes of gestational diabetes mellitus using one-step versus two-step diagnostic approaches: A population-based cohort study in Isfahan, Iran |

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| Hosseini2018 | Replicated cohort | Comparison of risk factors and pregnancy outcomes of gestational diabetes mellitus diagnosed during early and late pregnancy. |
| Hossein-Nezhad2007 | Cross-sectional study | PREVALENCE OF GESTATIONAL DIABETES MELLITUS AND PREGNANCY OUTCOMES IN IRANIAN WOMEN |
| Huang2016 | Not English | [Mid-gestational glucose levels and newborn birth weight: birth cohort study] |
| Hughes1997 | Unknown study duration | Gestational diabetes and fetal macrosomia in a multi-ethnic population. |
| Hunt2012 | Diagnosis based on ICD codes | Impact of maternal diabetes on birthweight is greater in non-Hispanic blacks than in non-Hispanic whites |
| Hutcheon2013 | No defined diagnosis criteria | Immortal time bias in the study of stillbirth risk factors: the example of gestational diabetes |
| Jacobson1989 | Conducted prior to 1990 | A population-based study of maternal and perinatal outcome in patients with gestational diabetes |
| Jain2014 | Replicated cohort | GESTATIONAL DIABETES: PERINATAL AND MATERNAL COMPLICATION IN 24-28 WEEKS |
| Jang1997 | Small sample size | Increased Macrosomia and Perinatal Morbidity Independent of Maternal Obesity and Advanced Age in Korean Women With GDM |
| Janssen1996 | No defined diagnosis criteria | Congenital malformations in newborns of women with established and gestational diabetes in Washington State, 1984-91 |
| Jensen2000 | Small sample size | Maternal and perinatal outcomes in 143 Danish women with gestational diabetes mellitus and 143 controls with a similar risk profile. |
| Jensen2003 | Replicated cohort | Proposed diagnostic thresholds for gestational diabetes mellitus according to a 75-g oral glucose tolerance test. Maternal and perinatal outcomes in 3260 Danish women |
| Jesmin2014 | No data | Screening for gestational diabetes mellitus and its prevalence in Bangladesh |
| Jiang2017 | No control | Comparison of adverse pregnancy outcomes based on the new IADPSG 2010 gestational diabetes criteria and maternal body mass index |
| Jiang2019 | No defined diagnosis criteria | Effects of gestational diabetes mellitus on time to delivery and pregnancy outcomes in full-term pregnancies with dinoprostone labor induction |
| Jimenez-Moleon2002 | Small sample size | Impact of different levels of carbohydrate intolerance on neonatal outcomes classically associated with gestational diabetes mellitus. |
| Joffe1998 | Unknown study duration | The relationship between abnormal glucose tolerance and hypertensive disorders of pregnancy in healthy nulliparous women |
| Jolly2003 | Case-control study | Risk factors for macrosomia and its clinical consequences: a study of 350,311 pregnancies |
| Jones2001 | No data | Gestational Diabetes and Its Impact on the Neonate |
| Jovanovic2005 | Conducted prior to 1990 | Elevated pregnancy losses at high and low extremes of maternal glucose in early normal and diabetic pregnancy: evidence for a protective adaptation in diabetes |
| Jovanovič2015 | Diagnosis based on ICD codes | Trends in the incidence of diabetes, its clinical sequelae, and associated costs in pregnancy |
| Jovanovic-Peterson1991 | Conducted prior to 1990 | Maternal postprandial glucose levels and infant birth weight: The Diabetes in Early Pregnancy Study |

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| Kale2005 | Not availiable | Characteristics of gestational diabetic mothers and their babies in an Indian diabetes clinic |
| Kalok2020 | Cross-sectional study | Correlation between Oral Glucose Tolerance Test Abnormalities and Adverse Pregnancy Outcomes in Gestational Diabetes: A Cross-Sectional Study |
| Kanai2016 | Small sample size | Cord blood insulin-like growth factor (IGF)-1, IGF-binding proteins and adiponectin, and birth size in offspring of women with mild gestational diabetes |
| Kang2020 | No data | Associations of exposure to fine particulate matter during pregnancy with maternal blood glucose levels and gestational diabetes mellitus: Potential effect modification by ABO blood group |
| Karasneh2021 | No defined diagnosis criteria | Trends in maternal characteristics, and maternal and neonatal outcomes of women with gestational diabetes: A study from Jordan |
| Karmon2009 | Conducted prior to 1990 | Decreased perinatal mortality among women with diet-controlled gestational diabetes mellitus |
| Kaul2015 | Limitation on subjects | Impact of gestational diabetes mellitus and high maternal weight on the development of diabetes, hypertension and cardiovascular disease: a population-level analysis |
| Kawakita2017 | Diagnosis based on ICD codes | Increased Neonatal Respiratory Morbidity Associated with Gestational and Pregestational Diabetes: A Retrospective Study |
| Kaymak2011 | Other types of diabetes were not excluded | Retrospective evaluation of perinatal outcome in women with mild gestational hyperglycemia. |
| Keller1991 | Limitation on subjects | Northwestern University Twin Study X: Outcome of twin gestations complicated by gestational diabetes mellitus. |
| Kelstrup2015 | Conducted prior to 1990 | Incretin and glucagon levels in adult offspring exposed to maternal diabetes in pregnancy |
| Khan1994 | Conducted prior to 1990 | relationship of fetal Macrosomia to a 75g Glucose Challenge Test in Nondiabetic Pregnant Women |
| Khatun2005 | Not availiable | Infant outcomes of gestational diabetes mellitus. |
| Khwaja1989 | Conducted prior to 1990 | Screening for gestational diabetes in a teaching hospital in Saudi Arabia. |
| Kieffer1998 | Other types of diabetes were not excluded | Influence of diabetes during pregnancy on gestational age-specific newborn weight among US black and US white infants |
| Kieffer2006 | No data | The Influence of Maternal Weight and Glucose Tolerance on Infant Birthweight in Latino Mother-Infant Pairs |
| Koivunen2016 | Conducted prior to 1990 | Towards national comprehensive gestational diabetes screening – Consequences for neonatal outcome and care |
| Kong2019 | Diagnosis based on ICD codes | Associations of Maternal Diabetes and Body Mass Index With Offspring BirthWeight and Prematurity |
| König2014 | Small sample size | Gestational diabetes outcome in a single center study: higher BMI in children after six months |

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| Koning2018 | Limitation on subjects | New diagnostic criteria for gestational diabetes mellitus and their impact on the number of diagnoses and pregnancy outcomes |
| Korucuoglu2008 | No GDM (only abnormal GCT screening) | Glycemic levels with glucose loading test during pregnancy and its association with maternal and perinatal outcomes |
| Köşüş 2012 | Replicated cohort | Gestational diabetes: comparision of the carpenter and the coustan thresholds with the new thresholds of Turkish women and implications of variations in diagnostic criteria |
| Kouhkan2018 | Limitation on subjects | Obstetric and perinatal outcomes of singleton pregnancies conceived via assisted reproductive technology complicated by gestational diabetes mellitus: a prospective cohort study |
| Kwik2007 | No control | Outcomes of pregnancies affected by impaired glucose tolerance |
| Kwon2018 | No GDM (only abnormal GCT screening) | The Association Between Low 50 g Glucose Challenge Test Values and Adverse Pregnancy Outcomes |
| Kwong2019 | No data | Perinatal Outcomes Among Different Asian Groups With Gestational Diabetes Mellitus in Ontario: A Cohort Study |
| Lackovic2021 | Small sample size | Gestational Diabetes and Risk Assessment of Adverse Perinatal Outcomes and Newborns Early Motoric Development |
| Lamminpaa2016 | Limitation on subjects | Pregnancy outcomes in women aged 35 years or older with gestational diabetes - a registry-based study in Finland |
| Langer1994 | Conducted prior to 1990 | Intensified versus conventional management of gestational diabetes |
| Lao2001 | No control | Perinatal morbidity and placental size in gestational impaired glucose tolerance |
| Lao2001 | Small sample size | Gestational diabetes diagnosed in third trimester pregnancy and pregnancy outcome |
| Lao2003 | Not availiable | Does maternal glucose intolerance affect the length of gestation in singleton pregnancies? |
| Lauring2018 | Small sample size | Comparison of healthcare utilization and outcomes by gestational diabetes diagnostic criteria |
| Lavery2017 | Conducted prior to 1990 | Gestational diabetes in the United States: temporal changes in prevalence rates between 1979 and 2010. |
| Lawlor2010 | No defined diagnosis criteria | Association of existing diabetes, gestational diabetes and glycosuria in pregnancy with macrosomia and offspring body mass index, waist and fat mass in later childhood: findings from a prospective pregnancy cohort |
| Legardeur2014 | No defined diagnosis criteria | Factors predictive of macrosomia in pregnancies with a positive oral glucose challenge test: Importance of fasting plasma glucose |
| Leirgul2016 | Diagnosis based on ICD codes | Maternal Diabetes, BirthWeight, and Neonatal Risk of Congenital Heart Defects in Norway, 1994–2009 |
| Liao2014 | Limitation on subjects | The impact of the International Association of Diabetes and Pregnancy Study Groups (IADPSG) fasting glucose diagnostic criterion on the prevalence and outcomes of gestational diabetes mellitus in Han Chinese women |

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| Liu2014 | No defined diagnosis criteria | Fetal growth is associated with maternal fasting plasma glucose at first prenatal visit. |
| Lu2019 | No data | Maternal Gestational Diabetes Is Associated With Offspring's Hypertension |
| Luo2013 | Limitation on subjects | Diabetes and Perinatal Mortality in Twin Pregnancies |
| Lynch2020 | Other types of diabetes were not excluded | Stillbirth in women with diabetes: a retrospective analysis of fetal autopsy reports. |
| Ma2020 | Limitation on subjects | Plasma Glycated CD59 Predicts Early Gestational Diabetes and Large for Gestational Age Newborns |
| Macaulay2018 | Replicated cohort | The prevalence of gestational diabetes mellitus amongst black South African women is a public health concern |
| Madsen2013 | Case-control study | Prepregnancy Body Mass Index and Congenital Heart Defects among Offspring: A Population-based Study |
| Magee1993 | Conducted prior to 1990 | Influence of Diagnostic Criteria on the Incidence of Gestational Diabetes and Perinatal Morbidity |
| Mallouli2017 | Limitation on subjects | Associated outcomes to fetal macrosomia: effect of maternal diabetes |
| Martinez-Cruz2019 | Limitation on subjects | Perinatal Outcomes in Mexican Women with Untreated Mild Gestational Diabetes Mellitus Diagnosed by the International Association of Diabetes and Pregnancy Study Groups Criteria. |
| Martínez-Cruz2019 | Limitation on subjects | Perinatal Outcomes in Mexican Women with Untreated Mild Gestational Diabetes Mellitus Diagnosed by the International Association of Diabetes and Pregnancy Study Groups Criteria |
| Martínez-Frías1994 | Conducted prior to 1990 | Epidemiological analysis of outcomes of pregnancy in diabetic mothers: identification of the most characteristic and most frequent congenital anomalies |
| Martínez-Frías2005 | Case-control study | Pre-gestational maternal body mass index predicts an increased risk of congenital malformations in infants of mothers with gestational diabetes |
| McMahon1998 | Conducted prior to 1990 | Gestational diabetes mellitus. Risk factors, obstetric complications and infant outcomes. |
| Meek2020 | Replicated cohort | Seasonal variations in incidence and maternal-fetal outcomes of gestational diabetes |
| Meharry2019 | Small sample size | Prevalence of gestational diabetes mellitus among women attending antenatal care at public health centers in Rwanda |
| Mei2021 | Limitation on subjects | Perinatal outcomes and offspring growth profiles in twin pregnancies complicated by gestational diabetes mellitus: A longitudinal cohort study |
| Meiramova2018 | Small sample size | PECULIARITIES OF THE COURSE OF GESTATION AND PREGNANCY OUTCOMES IN WOMEN WITH GESTATIONAL DIABETES MELLITUS |
| Meloncelli2020 | No control | Effects of Changing Diagnostic Criteria for Gestational Diabetes Mellitus in Queensland, Australia |
| Metcalfe2017 | No defined diagnosis criteria | Trends in Obstetric Intervention and Pregnancy Outcomes of Canadian Women With Diabetes in Pregnancy From 2004 to 2015 |

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| Metcalfe2020 | Replicated cohort | Timing of delivery in women with diabetes: A population-based study. |
| Metzger2008 | No data | Hyperglycemia and adverse pregnancy outcomes. |
| Metzger2010 | No data | Hyperglycemia and Adverse Pregnancy Outcome Study: Neonatal Glycemia |
| Metzger2012 | No data | The diagnosis of gestational diabetes mellitus: new paradigms or status quo? |
| Mimouni1987 | No defined diagnosis criteria | Respiratory distress syndrome in infants of diabetic mothers in the 1980s: No direct adverse effect of maternal diabetes with modern management |
| Mocarski2012 | No data | Ethnic differences in the association between gestational diabetes and pregnancy outcome |
| Mohammadbeigi2007 | Not English | Gestational diabetes related unpleasant outcomes of pregnancy |
| Mondestin2002 | Other types of diabetes were not excluded | Birth weight and fetal death in the United States: the effect of maternal diabetes during pregnancy |
| Moore2000 | Conducted prior to 1990 | A Prospective Study of the Risk of Congenital Defects Associated with Maternal Obesity and Diabetes Mellitus |
| Morgan2013 | No defined diagnosis criteria | Association of diabetes in pregnancy with child weight at birth, age 12 months and 5 years--a population-based electronic cohort study |
| Morikawa2010 | Small sample size | Change in the number of patients after the adoption of IADPSG criteria for hyperglycemia during pregnancy in Japanese women |
| Mortier2017 | Limitation on subjects | Is gestational diabetes an independent risk factor of neonatal severe respiratory distress syndrome after 34 weeks of gestation? A prospective study |
| Moses1995 | Replicated cohort | Can a diagnosis of gestational diabetes be an advantage to the outcome of pregnancy? |
| Moses2003 | Limitation on subjects | Twin pregnancy outcomes for women with gestational diabetes mellitus compared with glucose tolerant women. |
| Moshe Hod 1991 | Conducted prior to 1990 | Gestational Diabetes Mellitus: A Survey of Perinatal Complications in the 1980s |
| Muche2020 | Replicated cohort | Effects of gestational diabetes mellitus on risk of adverse maternal outcomes: a prospective cohort study in Northwest Ethiopia |
| Nakabuye2017 | Other types of diabetes were not excluded | Prevalence of hyperglycaemia first detected during pregnancy and subsequent obstetric outcomes at St. Francis Hospital Nsambya. |
| Nakanishi2020 | No control | Have pregnancy outcomes improved with the introduction of the International Association of Diabetes and Pregnancy Study Groups criteria in Japan? |
| Nasrat1996 | No control | Determinants of pregnancy outcome in patients with gestational diabetes |
| Naylor1996 | Conducted prior to 1990 | Cesarean Delivery in Relation to Birth Weight and Gestational Glucose Tolerance |
| Nazer2005 | Not English | [Congenital malformations among offspring of diabetic women] |
| Nerenberg2013 | No defined diagnosis criteria | Risks of Gestational Diabetes and Preeclampsia Over the Last Decade in a Cohort of Alberta Women |

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| Nomura2012 | No defined diagnosis criteria | Exposure to Gestational Diabetes Mellitus and Low Socioeconomic Status |
| Nord1995 | Conducted prior to 1990 | Blood glucose limits in the diagnosis of impaired glucose tolerance during pregnancy. Relation to morbidity. |
| Nordin2006 | No data | Comparison of maternal-fetal outcomes in gestational diabetes and lesser degrees of glucose intolerance. |
| Nunes2020 | No data | Two criteria of oral glucose tolerance test to diagnose gestational diabetes mellitus |
| Odar2004 | Small sample size | Maternal and fetal outcome of gestational diabetes mellitus in Mulago Hospital, Uganda |
| Ogawa2021 | Case-control study | Association Between Birth Weight and Risk of Pregnancy-Induced Hypertension and Gestational Diabetes in Japanese Women: JPHC-NEXT Study |
| Okby2014 | Limitation on subjects | Gestational diabetes mellitus in twin pregnancies is not associated with adverse perinatal outcomes. |
| Olumodeji2020 | Small sample size | Implementing the 2013 WHO diagnostic criteria for gestational diabetes mellitus in a Rural Nigerian Population |
| O'Malley2020 | Small sample size | The diagnosis of gestational diabetes mellitus (GDM) using a 75 g oral glucose tolerance test: A prospective observational study |
| Onal2012 | Limitation on subjects | Are the neonatal outcomes similar in large-for-gestational age infants delivered by women with or without gestational diabetes mellitus? |
| Orecchio2014 | Small sample size | Incidence of gestational diabetes and birth complications in Switzerland: screening in 1042 pregnancies |
| O'Sullivan1973 | Conducted prior to 1990 | Gestational diabetes and perinatal mortality rate |
| O'Sullivan2012 | Small sample size | Atlantic DIP: the prevalence and consequences of gestational diabetes in Ireland |
| Øyen2016 | Conducted prior to 1990 | Prepregnancy Diabetes and Offspring Risk of Congenital Heart Disease: A Nationwide Cohort Study |
| Ozbasli2020 | Small sample size | Comparison of factor XII levels in gestational diabetes, fetal macrosomia, and healthy pregnancies |
| Ozler2016 | Small sample size | Thiol/disulfide homeostasis in predicting adverse perinatal outcomes at 24-28 weeks of pregnancy in gestational diabetes |
| Page2020 | Limitation on subjects | Characteristics of Stillbirths Associated With Diabetes in a Diverse U.S. cohort |
| Park2015 | Small sample size | Maternal hyperglycemia and the 100-g oral glucose tolerance test. |
| Park2016 | No data | Development of a Screening Tool for Predicting Adverse Outcomes of Gestational Diabetes Mellitus: A Retrospective Cohort Study. |
| Patricia2009 | No defined diagnosis criteria | Pregnancy Outcomes in Diabetes Subtypes: How Do They Compare? A Province-based Study of Ontario, 2005–2006 |
| Pedersen1964 | Conducted prior to 1990 | CONGENITAL MALFORMATIONS IN NEWBORN INFANTS OF DIABETIC WOMEN: CORRELATION WITH MATERNAL DIABETIC VASCULAR COMPLICATIONS |
| Pedersen2018 | Cross-sectional study | Gestational diabetes and macrosomia among Greenlanders. Time to change diagnostic strategy? |
| Pennison2001 | Small sample size | Perinatal outcomes in gestational diabetes: A comparison of criteria for diagnosis |

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| Pereda2020 | Case-control study | Excessive Maternal Weight and Diabetes Are Risk Factors for Macrosomia: A Cross-Sectional Study of 42,663 Pregnancies in Uruguay |
| Persson1998 | No defined diagnosis criteria | Neonatal morbidities in gestational diabetes mellitus |
| Persson2013 | Replicated cohort | Disproportionate Body Composition and Neonatal Outcome in Offspring of MothersWith and Without Gestational Diabetes Mellitus |
| Persson2014 | Diagnosis based on ICD codes | Perinatal outcome in relation to fetal sex in offspring to mothers with pre-gestational and gestational diabetes--a population-based study |
| Petitt1985 | Conducted prior to 1990 | Gestational Diabetes Mellitus and Impaired Glucose Tolerance During Pregnancy: Long-Term Effects on Obesity and Glucose Tolerance in the Offspring |
| Pintaudi2015 | Diagnosis based on ICD codes | The long-term effects of stillbirth on women with and without gestational diabetes: a population-based cohort study |
| Prakash2017 | Small sample size | Maternal and Neonatal Outcome in Mothers with Gestational Diabetes Mellitus |
| Punnose2021 | No data | Prevalence of 'Hyperglycemia in pregnancy' remained stable between 2006 and 2015, despite rise in conventional risk factors: A hospital based study in Delhi, North India |
| Rafat2021 | Limitation on subjects | Association of vaginal dysbiosis and gestational diabetes mellitus with adverse perinatal outcomes |
| Ramos-Arroyo1992 | Case-control study | Maternal diabetes: the risk for specific birth defects |
| Rashid2017 | Not availiable | Perinatal Complications in Diabetes Mellitus with Pregnancy: Comparison between Gestational Diabetes Mellitus (GDM) and Diabetes Mellitus Prior to Pregnancy. |
| Rauh-Hain2009 | Limitation on subjects | Risk for developing gestational diabetes in women with twin pregnancies |
| Rehan2002 | Conducted prior to 1990 | Outcome of Very-Low-Birth-Weight (<1,500 Grams) Infants Born to Mothers with Diabetes |
| Reinders2020 | Diagnosis based on ICD codes | Real-world evaluation of adverse pregnancy outcomes in women with gestational diabetes mellitus in the German health care system |
| Remsberg1999 | Diagnosis based on ICD codes | Diabetes in pregnancy and cesarean delivery |
| Ren2011 | Cross-sectional study | Characterization of fetal cardiac structure and function detected by echocardiography in women with normal pregnancy and gestational diabetes mellitus |
| Reyes-Muñoz2018 | Limitation on subjects | Sensitivity of fasting glucose for gestational diabetes mellitus screening in Mexican adolescents based on International Association of Diabetes and Pregnancy Study Groups criteria: a diagnostic accuracy study based on retrospective data analysis |
| Ricart2009 | Case-control study | Maternal glucose tolerance status influences the risk of macrosomia in male but not in female fetuses |
| Riskin2020 | Diagnosis based on ICD codes | Perinatal Outcomes in Infants of Mothers with Diabetes in Pregnancy |
| Rizvi1992 | Conducted prior to 1990 | Experience with screening for abnormal glucose tolerance in pregnancy: maternal and perinatal outcome |

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| Robert1976 | Conducted prior to 1990 | ASSOCIATION BETWEEN MATERNAL DIABETES AND THE RESPIRATORY DISTRESS SYNDROME IN THE NEWBORN |
| Rosen2018 | Limitation on subjects | Delivery outcomes of large-for-gestational-age newborns stratified by the presence or absence of gestational diabetes mellitus |
| Rosenstein2012 | Diagnosis based on ICD codes | The risk of stillbirth and infant death stratified by gestational age in women with gestational diabetes |
| Rust1996 | Unknown study duration | Lowering the threshold for the diagnosis of gestational diabetes. |
| Sa2015 | Small sample size | Facial responses to basic tastes in the newborns of women with gestational diabetes mellitus. |
| Sahu2009 | Small sample size | Comparison of the American Diabetes Association and World Health Organization criteria for gestational diabetes mellitus and the outcomes of pregnancy |
| Salamon2013 | Not English | [Comparison of the effectiveness of two internationally recommended screening methods for the diagnosis of gestational diabetes] |
| Saxena2011 | Small sample size | Pregnancy outcome of women with gestational diabetes in a tertiary level hospital of north India |
| Saydah1995 | No defined diagnosis criteria | Pregnancy experience among women with and without gestational diabetes in the U |
| Schmidt2001 | No data | Gestational Diabetes Mellitus Diagnosed With a 2-h 75-g Oral Glucose Tolerance Test and Adverse Pregnancy Outcomes |
| Schneider2011 | No control | Neonatal complications and risk factors among women with gestational diabetes mellitus |
| Schraw2021 | Diagnosis based on ICD codes | Comprehensive assessment of the associations between maternal diabetes and structural birth defects in offspring: a phenome-wide association study |
| Sellers2016 | Conducted prior to 1990 | Exposure to Gestational Diabetes Mellitus: Impact on the Development of Early-Onset Type 2 Diabetes in Canadian First Nation and Non-First Nation Offspring |
| Sermer1995 | No data | Impact of increasing carbohydrate intolerance on maternal-fetal outcomes in 3637 women without gestational diabetes. The Toronto Tri-Hospital Gestational Diabetes Project. |
| Sermer1998 | Conducted prior to 1990 | The Toronto Tri-Hospital Gestational Diabetes Project. A preliminary review |
| Seval2016 | No control | Should we interpret the results of 'two-step' glucose screening again according to the obstetric outcomes? Journal of obstetrics and gynaecology : the journal of the Institute of Obstetrics and Gynaecology |
| Shand2008 | Cross-sectional study | Outcomes of pregnancies in women with pre-gestational diabetes mellitus and gestational diabetes mellitus; a population-based study in New South Wales, Australia, 1998–2002 |
| Shannon2016 | No defined diagnosis criteria | Pregnancy snapshot: A retrospective, observational case-control study to evaluate potential effects of maternal diabetes treatment during pregnancy on macrosomia |

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| Shareef2019 | No control | The impact of implementing the WHO-2013 criteria for gestational diabetes mellitus on its prevalence and pregnancy outcomes: A comparison of the WHO-1999 and WHO-2013 diagnostic thresholds |
| Sharifi2010 | Small sample size | Serum ferritin concentration in gestational diabetes mellitus and risk of subsequent development of early postpartum diabetes mellitus |
| Sharpe2005 | No defined diagnosis criteria | Maternal Diabetes and Congenital Anomalies in South Australia 1986–2000: A Population-Based Cohort Study |
| Shefali2006 | Small sample size | Pregnancy outcomes in pre-gestational and gestational diabetic women in comparison to non-diabetic women--A prospective study in Asian Indian mothers (CURES-35) |
| Shindo2021 | Small sample size | Impact of gestational diabetes mellitus diagnosed during the third trimester on pregnancy outcomes: a case-control study |
| Shinohara2015 | No GDM (only abnormal GCT screening) | Relation between low 50-g glucose challenge test results and small-for-gestational-age infants |
| Shirazian2008 | Unknown study duration | COMPARISON OF DIFFERENT DIAGNOSTIC CRITERIA FOR GESTATIONAL DIABETES MELLITUS BASED ON THE 75-g ORAL GLUCOSE TOLERANCE TEST: A COHORT STUDY |
| Simoes2011 | Limitation on subjects | Gestational diabetes mellitus complicating twin pregnancies |
| Siricharoenthai2020 | Small sample size | Diagnostic accuracy of HbA1c in detecting gestational diabetes mellitus |
| Snapp 2008 | Conducted prior to 1990 | Gestational Diabetes Mellitus: Physical Exercise and Health Outcomes |
| Sohn2020 | Small sample size | Delayed diagnosis of gestational diabetes mellitus and perinatal outcomes in women with large for gestational age fetuses during the third trimester |
| Stamilio2014 | No GDM (only abnormal GCT screening) | False-positive 1-hour glucose challenge test and adverse perinatal outcomes |
| Stella2008 | No defined diagnosis criteria | The coexistence of gestational hypertension and diabetes: influence on pregnancy outcome |
| Stenninger1997 | Small sample size | Early postnatal hypoglycaemia in newborn infants of diabetic mothers |
| Stone2002 | No defined diagnosis criteria | Gestational diabetes in Victoria in 1996: incidence, risk factors and outcomes. |
| Su2019 | No data | Effects of Prepregnancy Body Mass Index, Weight Gain, and Gestational Diabetes Mellitus on Pregnancy Outcomes: A Population-Based Study in Xiamen, China, 2011–2018 |
| Sudasinghe2018 | No data | Long and short-term outcomes of Gestational Diabetes Mellitus (GDM) among South Asian women – A community-based study |
| Sugaya2000 | Small sample size | Comparison of the validity of the criteria for gestational diabetes mellitus by WHO and by the Japan Society of Obstetrics and Gynecology by the outcomes of pregnancy |

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| Sugiyama2014 | No data | Pregnancy outcomes of gestational diabetes mellitus according to pre-gestational BMI in a retrospective multi-institutional study in Japan |
| Suhonen1993 | Conducted prior to 1990 | Hypertension and pre-eclampsia in women with gestational glucose intolerance |
| Suhonen2008 | Conducted prior to 1990 | Detection of pregnancies with high risk of fetal macrosomia among women with gestational diabetes mellitus |
| Sumeksri2006 | Limitation on subjects | Prevalence of gestational diabetes mellitus (GDM) in pregnant women aged 30 to 34 years old at Phramongkutklao Hospital |
| Sun1995 | No GDM (only abnormal GCT screening) | Prospective studies on the relationship between the 50 g glucose challenge test and pregnant outcome |
| Sun2020 | No data | Elevated First-Trimester Neutrophil Count Is Closely Associated with the Development of Maternal Gestational Diabetes Mellitus and Adverse Pregnancy Outcomes |
| Tabatabaee2020 | Case-control study | Risk of Stillbirth in Women with Gestational Diabetes and High Blood Pressure |
| Tabatabaei2014 | Small sample size | Osteocalcin is higher across pregnancy in Caucasian women with gestational diabetes mellitus |
| Tain2016 | No defined diagnosis criteria | Incidence and Risks of Congenital Anomalies of Kidney and Urinary Tract in Newborns: A Population-Based Case–Control Study in Taiwan |
| Tanacan2020 | No GDM (only abnormal GCT screening) | Use of the 50-g glucose challenge test to predict small-for-gestational-age neonates |
| Tarvonen2021 | Limitation on subjects | Intrapartal cardiotocographic patterns and hypoxia-related perinatal outcomes in pregnancies complicated by gestational diabetes mellitus |
| Timofeev2012 | No defined diagnosis criteria | Spontaneous labor curves in women with pregnancies complicated by diabetes |
| Tonguc2018 | No data | An evaluation of two different screening criteria in gestational diabetes mellitus |
| Torres-Espinola2015 | No defined diagnosis criteria | Maternal Obesity, Overweight and Gestational Diabetes Affect the Offspring Neurodevelopment at 6 and 18 Months of Age – A Follow Up from the PREOBE Cohort |
| Tsai2013 | No defined diagnosis criteria | Gestational diabetes and macrosomia by race/ethnicity in Hawaii |
| Tward2016 | Limitation on subjects | Does gestational diabetes affect fetal growth and pregnancy outcome in twin pregnancies. |
| Valadbeigi2020 | Case-control study | Evaluating the association between neonatal mortality and maternal high blood pressure, heart disease and gestational diabetes: A case control study |
| Vignoles2011 | No defined diagnosis criteria | Gestational diabetes: a strong independent risk factor for severe neonatal respiratory failure after 34 weeks |
| Virally2007 | Small sample size | Occurrence of gestational diabetes mellitus, maternal and fetal outcomes beyond the 28th week of gestation in women at high risk of gestational diabetes |

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| Vivet-Lefébure2007 | Not English | [Obstetrical and neonatal outcomes of gestational diabetes mellitus at Reunion Island (France)] |
| Wahabi2016 | Replicated cohort | Prevalence and Complications of Pregestational and Gestational Diabetes in Saudi Women: Analysis from Riyadh Mother and Baby Cohort Study (RAHMA) |
| Wahi2011 | Small sample size | Prevalence of gestational diabetes mellitus (GDM) and its outcomes in Jammu region. |
| Wahlberg2016 | No data | Gestational diabetes: Glycaemic predictors for fetal macrosomia and maternal risk of future diabetes |
| Wakwoya2018 | Grey literature (biorxiv) | Gestational Diabetes Mellitus Is a Risk for Macrosomia: Case- Control Study in Eastern Ethiopia |
| Wang2009 | Not English | [Effect of impaired glucose tolerance during pregnancy on newborns] |
| Wang2013 | Not English | [Analysis of the effects of gestational diabetes mellitus based on abnormal blood glucose on pregnancy outcomes] |
| Wang2015 | Limitation on subjects | Influence of pre-pregnancy obesity on the development of macrosomia and large for gestational age in women with or without gestational diabetes mellitus in Chinese population |
| Wang2020 | No data | Maternal diabetes and the risk of feeding and eating disorders in offspring: a national population-based cohort study |
| Waters2016 | Replicated cohort | Maternal and Neonatal Morbidity for Women Who Would Be Added to the Diagnosis of GDM Using IADPSG Criteria: A Secondary Analysis of the Hyperglycemia and Adverse Pregnancy Outcome Study |
| Wei2011 | Not English | [Comparison of the diagnostic criteria for gestational diabetes mellitus in China] |
| Wendland2008 | No data | Gestational diabetes and pre-eclampsia: common antecedents? Arquivos brasileiros de endocrinologia e metabologia |
| Werner2019 | No defined diagnosis criteria | Association of Gestational Diabetes Mellitus With Neonatal Respiratory Morbidity |
| Wery2014 | Not English | [Impact of the new screening criteria on the gestational diabetes prevalence] |
| Weschenfelder2021 | Limitation on subjects | Contributing Factors to Perinatal Outcome in Pregnancies with Gestational Diabetes—What Matters Most? A Retrospective Analysis |
| West1986 | Conducted prior to 1990 | MATERNAL DIABETES AND NEONATAL MACROSOMIA: Dynamic Skinfold Thickness Measurements |
| Wood2003 | Conducted prior to 1990 | The risk of stillbirth in pregnancies before and after the onset of diabetes |
| Wu2020 | No defined diagnosis criteria | Association of Maternal Prepregnancy Diabetes and Gestational Diabetes Mellitus With Congenital Anomalies of the Newborn |
| Yakut2021 | Small sample size | Is GDF-15 level associated with gestational diabetes mellitus and adverse perinatal outcomes? Taiwanese journal of obstetrics & gynecology |
| Yang B2019 | No data | Interactive effects of prepregnancy overweight and gestational diabetes on macrosomia and large for gestational age: A population-based prospective cohort in Tianjin, China |

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| Yang2019 | Case-control study | Interactive effects of prepregnancy overweight and gestational diabetes on macrosomia and large for gestational age: A population-based prospective cohort in Tianjin, China |
| Yang2019 | No defined diagnosis criteria | Effects of pre-gestational diabetes mellitus and gestational diabetes mellitus on macrosomia and birth defects in Upstate New York |
| Yeo JY 1997 | Small sample size | The Perinatal Complications in Infants of Mothers with Gestational Diabetes Mellitus |
| Yew2014 | Small sample size | The Prevalence of Gestational Diabetes Mellitus Among Asian Females is Lower Using the New 2013 World Health Organization Diagnostic Criteria |
| Yogev2010 | No data | Hyperglycemia and Adverse Pregnancy Outcome (HAPO) study: preeclampsia. |
| Zamstein2018 | Replicated cohort (SUMC) | Maternal Gestational Diabetes and Long-Term Respiratory Related Hospitalizations of the Offspring. |
| Zeki2019 | Limitation on subjects | Obstetric anal sphincter injuries among women with gestational diabetes and women without gestational diabetes: A NSW population-based cohort study |
| Zhang2013 | Small sample size | Evaluation of oral glucose tolerance test, β-cell function and adverse obstetric outcomes |
| Zhao2021 | Limitation on subjects | The factors affecting the physical development of neonates in pregnant women with or without gestational diabetes mellitus |

**Supplemental Table S6. Unadjusted associations between GDM and pregnancy outcomes**

**6.1 Subset A (without insulin use)**

| Outcome | Studies (n) | p-value | RR 95%CI | $tau^2$ | $I^2$ (%) |
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| **Maternal outcomes** | | | | | |
| Pre-eclampsia | 18 | <0.001 | 1.75 (1.53 to 2.00) | 0.01 | 40.9 |
| Induction | 9 | 0.04 | 1.14 (1.01 to 1.28) | 0.01 | 41.0 |
| Instrumental delivery | 8 | 0.36 | 0.95 (0.84 to 1.06) | 0.003 | 0.0 |
| Cesarean section | 28 | <0.001 | 1.34 (1.26 to 1.43) | 0.02 | 92.9 |
| Shoulder dystocia | 14 | 0.001 | 1.40 (1.18 to 1.66) | 0.01 | 21.8 |
| PROM | 0 | | | | |
| PPH | 7 | 0.44 | 1.13 (0.83 to 1.54) | 0 | 0.0 |
| **Neonatal outcomes** | | | | | |
| Stillbirth | 5 | 0.65 | 1.22 (0.52 to 2.86) | 0 | 0.0 |
| Neonatal death | 0 | | | | |
| Congenital malformation | 4 | 0.35 | 1.20 (0.82 to 1.76) | <0.001 | 0.0 |
| Preterm delivery | 25 | <0.001 | 1.25 (1.14 to 1.36) | 0.005 | 35.3 |
| RDS | 4 | 0.31 | 1.30 (0.66 to 2.56) | 0.08 | 46.0 |
| Low 1-Apgar score | 5 | <0.001 | 1.36 (1.24 to 1.49) | 0 | 0.0 |
| Low 5-Apgar score | 9 | 0.04 | 1.23 (1.01 to 1.51) | 0 | 0.0 |
| Macrosomia | 27 | <0.001 | 1.63 (1.42 to 1.88) | 0.09 | 88.7 |
| LGA | 24 | <0.001 | 1.67 (1.46 to 1.91) | 0.08 | 91.3 |
| LBW | 6 | <0.001 | 0.84 (0.78 to 0.91) | 0.02 | 34.4 |
| SGA | 16 | 0.001 | 0.76 (0.66 to 0.88) | 0.03 | 38.9 |
| Neonatal hypoglycemia | 3 | 0.10 | 5.68 (0.47 to 68.71) | 0.81 | 82.8 |
| Neonatal jaundice | 9 | 0.02 | 1.20 (1.03 to 1.40) | 0.007 | 10.9 |
| NICU admission | 15 | 0.03 | 1.27 (1.04 to 1.56) | 0.11 | 91.2 |

**6.2 Subset B (with insulin use)**

| Outcomes | Studies (n) | p-value | RR 95%CI | $tau^2$ | $I^2$ (%) |
|---|---|---|---|---|---|
| **Maternal outcomes** | | | | | |
| Pre-eclampsia | 18 | <0.001 | 1.52 (1.28 to 1.81) | 0.02 | 33.5 |
| Induction | 12 | 0.003 | 1.55 (1.21 to 1.98) | 0.13 | 92.6 |
| Instrumental delivery | 13 | 0.66 | 0.98 (0.91 to 1.06) | 0.002 | 0.0 |
| Cesarean section | 41 | <0.001 | 1.41 (1.28 to 1.55) | 0.07 | 89.9 |
| Shoulder dystocia | 16 | 0.004 | 2.01 (1.31 to 3.10) | 0.41 | 65.9 |
| PROM | 6 | 0.29 | 1.36 (0.69 to 2.67) | 0.30 | 70.1 |
| PPH | 3 | 0.31 | 1.34 (0.76 to 2.35) | 0 | 0.0 |
| **Neonatal outcomes** | | | | | |
| Stillbirth | 13 | 0.62 | 1.18 (0.58 to 2.42) | 1.08 | 90.8 |
| Neonatal death | 8 | 0.23 | 1.52 (0.71 to 3.23) | 0.50 | 68.0 |
| Congenital malformation | 14 | 0.01 | 1.60 (1.13 to 2.28) | 0.26 | 85.1 |
| Preterm delivery | 33 | <0.001 | 1.29 (1.12 to 1.49) | 0.09 | 79.7 |

| | | | | | |
|---|---|---|---|---|---|
| RDS | 16 | <0.001 | 1.30 (1.18 to 1.44) | 0.004 | 0.6 |
| Low 1-Apgar score | 5 | 0.21 | 1.73 (0.62 to 4.88) | 0.53 | 80.6 |
| Low 5-Apgar score | 14 | 0.47 | 1.19 (0.72 to 1.94) | 0.40 | 64.6 |
| Macrosomia | 35 | <0.001 | 1.73 (1.47 to 2.03) | 0.13 | 81.2 |
| LGA | 35 | <0.001 | 1.72 (1.42 to 2.09) | 0.26 | 91.0 |
| LBW | 19 | 0.14 | 1.05 (0.98 to 1.12) | 0.02 | 43.9 |
| SGA | 23 | <0.001 | 0.81 (0.72 to 0.90) | 0.03 | 34.0 |
| Neonatal hypoglycemia | 6 | 0.04 | 6.18 (1.19 to 32.16) | 2.16 | 88.6 |
| Neonatal jaundice | 14 | <0.001 | 1.80 (1.34 to 2.42) | 0.19 | 87.6 |
| NICU admission | 17 | <0.001 | 1.99 (1.66 to 2.37) | 0.08 | 81.3 |

**6.3 Subset C (insulin use not reported)**

| **Outcomes** | **Studies (n)** | **p-value** | **RR 95%CI** | ***tau*$^2$** | ***I*$^2$ (%)** |
|---|---|---|---|---|---|
| **Maternal outcomes** | | | | | |
| Pre-eclampsia | 17 | <0.001 | 1.82 (1.64 to 2.02) | 0.02 | 78.7 |
| Induction | 10 | 0.01 | 1.38 (1.10 to 1.74) | 0.08 | 97.1 |
| Instrumental delivery | 4 | 0.36 | 1.27 (0.63 to 2.57) | 0.17 | 85.7 |
| Cesarean section | 37 | <0.001 | 1.53 (1.30 to 1.80) | 0.22 | 97.0 |
| Shoulder dystocia | 9 | 0.09 | 1.48 (0.92 to 2.38) | 0.26 | 91.4 |
| PROM | 7 | 0.03 | 1.78 (1.10 to 2.87) | 0.19 | 85.5 |
| PPH | 6 | 0.34 | 1.13 (0.84 to 1.53) | 0.07 | 81.4 |
| **Neonatal outcomes** | | | | | |
| Stillbirth | 13 | 0.38 | 1.15 (0.82 to 1.61) | 0.14 | 73.2 |
| Neonatal death | 4 | 0.37 | 1.95 (0.26 to 14.54) | 1.16 | 85.3 |
| Congenital malformation | 8 | 0.003 | 1.19 (1.09 to 1.30) | 0 | 36.5 |
| Preterm delivery | 29 | <0.001 | 1.67 (1.40 to 1.99) | 0.16 | 95.3 |
| RDS | 4 | 0.01 | 1.41 (1.08 to 1.83) | 0 | 0.0 |
| Low 1-Apgar score | 4 | 0.22 | 1.86 (0.51 to 6.81) | 0.55 | 86.6 |
| Low 5-Apgar score | 11 | 0.15 | 1.41 (0.87 to 2.28) | 0.24 | 71.6 |
| Macrosomia | 31 | <0.001 | 2.07 (1.71 to 2.51) | 0.21 | 90.3 |
| LGA | 25 | <0.001 | 1.79 (1.52 to 2.11) | 0.12 | 97.2 |
| LBW | 13 | 0.34 | 1.08 (0.92 to 1.26) | 0.03 | 69.4 |
| SGA | 19 | 0.09 | 0.87 (0.74 to 1.02) | 0.04 | 74.0 |
| Neonatal hypoglycemia | 2 | 0.21 | 6.18 (0.00 to 1.42e4) | 0.63 | 82.8 |
| Neonatal jaundice | 2 | 0.13 | 1.19 (0.74 to 1.93) | 0 | 0.0 |
| NICU admission | 17 | 0.006 | 1.45 (1.13 to 1.85) | 0.20 | 96.2 |

**Supplemental Table S7. Subgroup analysis according to country status, diagnostic criteria, screening method, and risk of bias for adverse pregnancy outcomes in women with GDM compared with women without GDM in subset C**

| Outcomes | Country status | | | | Overall risk | | |
|---|---|---|---|---|---|---|---|
| | Developed | Developing | p value | | Medium | Low | p value |
| **Maternal** | | | | | | | |
| Caesarean section | 7 | 3 | 0.29 | | 3 | 5 | 0.30 |
| | 1.35 (1.09 to 1.68) | 1.49 (1.32 to 1.68) | | | 1.53 (0.65 to 3.60) | 1.30 (1.09 to 1.57) | |
| **Neonatal** | | | | | | | |
| Preterm delivery | 7 | 1 | 0.71 | | 2 | 6 | 0.57 |
| | 1.51 (1.15 to 1.98) | 1.87 (0.62 to 5.61) | | | 2.00 (0.00 to 1195.22) | 1.50 (1.17 to 1.93) | |
| Low 5-Apgar score | 4 | 2 | 0.11 | | 3 | 3 | 0.20 |
| | 1.10 (0.88 to 1.37) | 1.41 (0.23 to 8.51) | | | 1.48 (0.55 to 4.01) | 1.10 (0.91 to 1.32) | |
| LGA | 6 | 2 | 0.87 | | 2 | 6 | 0.33 |
| | 1.45 (0.98 to 2.14) | 1.31 (0.00 to 2854.66) | | | 1.77 (0.15 to 20.69) | 1.29 (0.78 to 2.12) | |
| NICU admission | 5 | 1 | 0.82 | | 2 | 4 | <0.001 |
| | 2.32 (1.06 to 5.07) | 2.13 (1.31 to 3.46) | | | 4.36 (1.46 to 13.05) | 1.60 (1.52 to 1.68) | |

Continued

| Outcomes | | Diagnostic criteria | | | | Screening method | | | |
|---|---|---|---|---|---|---|---|---|---|
| | WHO1999 | IADPSG | Other | p value | | Universal 1-step | Universal GCT | Selective | p value |
| **Maternal** | | | | | | | | | |
| Cesarean section | 1 | 4 | 5 | 0.32 | | 3 | 5 | 2 | <0.001 |
| | 1.57 (1.36 to 1.81) | 1.42 (1.33 to 1.53) | 1.30 (0.94 to 1.81) | | | 1.49 (1.32 to 1.680 | 1.24 (1.02 to 1.51) | 1.91 (0.62 to 5.82) | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Neonatal** | | | | | | | | | |
| Preterm delivery | 0 | 2 | 6 | 0.49 | | 1 | 4 | 3 | 0.29 |
| | | 1.18 (0.01 to 1.17e2) | 1.54 (1.15 to 2.07) | | | 1.87 (0.62 to 5.61) | 1.33 (0.93 to 1.89) | 1.81 (0.86 to 3.80) | |
| Low 5-Apgar score | 1 | 1 | 4 | 0.27 | | 3 | 1 | 2 | 0.48 |
| | 1.66 (1.01 to 2.72) | 1.25 (0.80 to 1.94) | 1.10 (0.88 to 1.37) | | | 1.34 (0.64 to 2.84) | 1.12 (1.00 to 1.25) | 2.43 (0.00 to 2786087.76) | |
| LGA | 0 | 4 | 4 | 0.57 | | 3 | 5 | 0 | 0.28 |
| | | 1.57 (0.71 to 3.49) | 1.30 (0.63 to 2.67) | | | 1.01 (0.15 to 6.55) | 1.61 (1.43 to 1.80) | | |
| NICU admission | 0 | 3 | 3 | 0.84 | | 2 | 2 | 2 | <0.001 |
| | | 2.43 (0.61 to 9.63) | 2.19 (0.38 to 12.48) | | | 1.73 (0.12 to 24.91) | 1.60 (1.43 to 1.78) | 4.36 (1.46 to 13.05) | |

Data are numbers of studies, odds ratios (ORs), and ranges in brackets are 95% CIs, unless stated otherwise. p value measures intergroup interaction. NA indicates that calculation of the effect estimates is not applicable. Subgroup analyses were performed only for outcomes containing ≥ 6 studies

**Supplemental Table S8. Subgroup analysis according to adjustment for BMI for adverse pregnancy outcomes in women with GDM compared with women without GDM**

**8.1 Subset A (without insulin use).**

| Outcomes | Adjustment for BMI | | |
|---|---|---|---|
| | **Yes** | **No** | **p value** |
| **Maternal** | | | |
| Pre-eclampsia | 8 | 1 | 0.12 |
| | 1.28 (0.87 to 1.90) | 1.74 (1.43 to 2.11) | |
| Cesarean section | 11 | 2 | 0.92 |
| | 1.15 (1.01 to 1.31) | 1.12 (0.04 to 34.17) | |
| **Neonatal** | | | |
| Preterm delivery | 9 | 2 | |
| | 1.45 (1.14 to 1.84) | 1.65 (0.73 to 3.75) | |
| Macrosomia | 13 | 1 | 0.32 |
| | 1.74 (1.21 to 2.48) | 1.40 (1.06 to 1.85) | |
| LGA | 13 | 2 | 0.76 |
| | 1.57 (1.20 to 2.04) | 1.64 (0.45 to 6.00) | |
| SGA | 7 | 0 | NA |
| | 0.83 (0.55 to 1.23) | | |
| NICU admission | 8 | 1 | 0.31 |
| | 1.38 (0.83 to 2.30) | 1.00 (0.63 to 1.59) | |

Data are numbers of studies and odds ratios (ORs) with ranges in brackets are 95% CIs, unless stated otherwise. p value measures intergroup interaction. NA indicates that calculation of the effect estimates is not applicable. Subgroup analyses were performed only for outcomes containing ≥ 6 studies.

**8.2 Subset B (with insulin use).**

| Outcomes | Adjustment for BMI | | |
|---|---|---|---|
| | **Yes** | **No** | **p value** |
| **Neonatal** | | | |
| Macrosomia | 2 | 4 | 0.02 |
| | 2.58 (0.91 to 7.33) | 1.39 (0.62 to 3.12) | |
| LGA | 2 | 5 | <0.001 |
| | 3.54 (1.11 to 11.26) | 1.46 (1.18 to 1.80) | |

Data are numbers of studies and odds ratios (ORs) with ranges in brackets are 95% CIs, unless stated otherwise. p value measures intergroup interaction. NA indicates that calculation of the effect estimates is not applicable. Subgroup analyses were performed only for outcomes containing ≥ 6 studies.

**8.3 Subset C (not reported insulin use).**

| Outcomes | Adjustment for BMI | | |
|---|---|---|---|
| | **Yes** | **No** | **p value** |
| **Maternal** | | | |
| Cesarean section | 5 | 5 | 0.36 |

| | | | |
|---|---|---|---|
| | 1.49 (1.34 to 1.65) | 1.34 (1.00 to 1.79) | |
| **Neonatal** | | | |
| Preterm delivery | 4 | 4 | 0.72 |
| | 1.63 (1.18 to 2.25) | 1.51 (0.80 to 2.83) | |
| Low 5-Apgar score | 4 | 2 | 0.46 |
| | 1.16 (0.75 to 1.77) | 2.52 (0.00 to 1.41e6) | |
| LGA | 3 | 5 | 0.13 |
| | 0.19 to 4.46 | 1.62 (1.41 to 1.86) | |
| NICU admission | 4 | 2 | 0.68 |
| | 0.91 to 4.94 | 2.77 (0.00 to 4.85e3) | |

Data are numbers of studies and odds ratios (ORs) with ranges in brackets are 95% CIs, unless stated otherwise. p value measures intergroup interaction. NA indicates that calculation of the effect estimates is not applicable. Subgroup analyses were performed only for outcomes containing ≥ 6 studies.

**Supplemental Table S9. Univariate and multiple meta-regression models to evaluate the modification power of proportion of insulin use among GDM populations**

| Outcomes | Meta-regression | *tau^2* | *I^2* | *R^2* | Estimate | 95%CI | p |
|---|---|---|---|---|---|---|---|
| **Maternal** | | | | | | | |
| Caesarean section | Univariable | 0.0273 | 63.52% | 0.00% | 0.0068 | 0.0002 to 0.0135 | **0.04** |
| | Multiple | 0.0261 | 56.61% | 0.00% | 0.0069 | -0.0008 to 0.0145 | 0.07 |
| Pre-eclampsia | Univariable | 0.0591 | 48.23% | 0.00% | -0.0032 | -0.026 to 0.0195 | 0.75 |
| | Multiple | 0.2855 | 72.89% | 0.00% | -0.0019 | -0.1113 to 0.1075 | 0.96 |
| **Neonatal** | | | | | | | |
| LGA | Univariable | 0.1427 | 83.36% | 0.00% | 0.0052 | -0.0145 to 0.0249 | 0.59 |
| | Multiple | 0.1547 | 80.31% | 0.00% | -0.0032 | -0.0308 to 0.0244 | 0.81 |
| Macrosomia | Univariable | 0.2796 | 84.05% | 0.00% | 0.0028 | -0.0098 to 0.0154 | 0.65 |
| | Multiple | 0.2603 | 81.44% | 1.39% | -0.002 | -0.0165 to 0.0125 | 0.77 |
| NICU | Univariable | 0.2328 | 83.97% | 8.02% | 0.008 | -0.004 to 0.02 | 0.17 |
| | Multiple | 0.3401 | 85.02% | 0.00% | 0.0075 | -0.0102 to 0.0252 | 0.35 |
| Preterm delivery | Univariable | 0 | 0.00% | 99.99% | -0.0069 | -0.0134 to -0.0005 | **0.04** |
| | Multiple | 0.0007 | 0.97% | 97.13% | -0.0073 | -0.0162 to 0.0016 | 0.10 |
| SGA | Univariable | 0.1007 | 60.55% | 0.00% | -0.0024 | -0.0266 to 0.0217 | 0.82 |
| | Multiple | 0 | 0.00% | 100.00% | 0.0298 | -0.0266 to 0.0863 | 0.19 |

Meta-regression analysis was not performed for outcomes containing <10 studies.

$tau^2$: estimated amount of residual heterogeneity;

$I^2$: residual heterogeneity / unaccounted variability;

$R^2$: means the amount of heterogeneity the meta-regression model accounts for.

**Supplemental Table S10. The results of Egger's test.**

| Outcomes | t | df | p-value | bias | intercept |
|---|---|---|---|---|---|
| **Maternal outcomes** | | | | | |
| Pre-eclampsia | -0.24 | 13 | 0.82 | -0.1917 | 0.3964 |
| Induction | 1.54 | 9 | 0.16 | 2.2298 | 0.1792 |
| Caesarean section | 2.75 | 25 | **0.01** [a] | 1.6015 | 0.1087 |
| **Neonatal outcomes** | | | | | |
| Preterm delivery | 0.74 | 22 | 0.47 | 0.6535 | 0.3003 |
| Low 5-min Apgar score | 0.63 | 8 | 0.55 | 0.3280 | 0.0741 |
| Macrosomia | 0.39 | 23 | 0.70 | 0.2643 | 0.3776 |
| LGA | -0.18 | 29 | 0.86 | -0.1109 | 0.4621 |
| SGA | -0.06 | 13 | 0.96 | -0.0338 | -0.0881 |
| NICU admission | 0.96 | 17 | 0.35 | 0.7297 | 0.4839 |

Reference: Egger et al. 1997 (BMJ).

[a] $p < 0.05$, suggesting asymmetry of the funnel plot for caesarean section.

**Supplemental Table S11. Adjustment for core confounders**

| Study | Core confounders | | | | | | | No. of adjusted confounders |
|---|---|---|---|---|---|---|---|---|
| | Maternal age | Pregestational BMI | Gestational weight gain | Smoking | Gravidity | Parity | Chronic hypertension | |
| Alberico2014 | | + | | | | + | | 2 |
| Anderberg2010 | + | | | | | | | 1 |
| Barakat2010 | | + | | | | | + | 2 |
| Berggren2011 | + | | | | | + | | 2 |
| Bodmer-Roy2012 | + | + | | | | + | + | 4 |
| Catalano2012 | + | | | + | | + | + | 4 |
| Cosson2006 | + | + | | | | + | | 3 |
| Davis2018 | + | | + | | | | | 2 |
| Domanski2018 | + | + | | | | | | 2 |
| Donovan2017 | | | | + | | | + | 2 |
| Ekeroma2015 | + | + | | | | + | | 3 |
| Erjavec2016 | + | + | | | | | | 2 |
| Gasim2012 | + | + | | | | + | + | 4 |
| Gorgal2012 | + | + | + | | | | | 3 |
| Gortazar2019 | + | | | + | | | | 2 |
| Hedderson2003 | + | | | | | | + | 2 |
| Hildén2019 | + | + | | + | | + | + | 5 |
| Hillier2008 | + | | + | | | + | | 3 |
| Hirst2012 | + | + | | + | | + | + | 5 |
| Jensen2003 | + | + | + | + | | | | 4 |
| Kgosidialwa2015 | + | + | | + | | + | | 4 |
| Kim2019 | + | + | | | | + | | 3 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Koivunen2020 | + | + | | | | + | | 3 |
| Laafira2016 | | + | + | | | + | | 3 |
| Lai2016 | + | | | | | + | + | 3 |
| Lee2020 | + | + | | | | + | | 3 |
| Li2014 | + | + | + | + | | + | | 5 |
| Liu2020-2 | + | + | + | | | + | | 4 |
| Lu2016 | + | + | | | | | | 2 |
| Luengmettakul2015 | + | + | | | | + | | 3 |
| Mak2019 | + | + | | | | + | | 3 |
| Mayo2015 | + | | | | | | | 1 |
| Meek2015 | + | + | | + | | + | | 4 |
| Miailhe2015 | + | + | | | | | + | 3 |
| Muche2020 | + | | | | | + | | 2 |
| Nielsen2021 | + | + | | | | + | | 3 |
| O'Sullivan2011 | + | + | | | | | | 2 |
| Ovesen2015 | + | + | | + | | + | | 4 |
| Redman2021 | + | + | + | | | | | 3 |
| Ricart2005 | + | + | | | | | | 2 |
| Saldana2003 | + | + | | | | | | 2 |
| Shah2019 | + | | | | | | | 1 |
| Shindo2020 | + | + | | | | | | 2 |
| Shub2019 | + | + | | | | + | | 3 |
| Sugiyama2017 | + | + | | | | | | 2 |
| Tan2017 | + | | | | | | | 1 |
| Wan2019 | + | + | | + | | + | | 4 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Wang2021 | + | + | + | + | | + | | 5 |
| Xiong2001 | + | | | + | | + | | 3 |
| Zeki2018 | + | | | + | | | + | 3 |

Symbol '+' indicates that the study adjusts specific confounder. It should be noted that some studies have subtle differences in terms of adjusted confounding factors when reporting different pregnancy outcomes

**Supplemental Table S12. Comprehensive summary of included studies.**

| Study | Country | Status | Continent | Design | Sample size | Screening method | Diagnosis criteria | Proportion of insulin use (%) | ROB |
|---|---|---|---|---|---|---|---|---|---|
| Abell2017 | Australia | Developed | Oceania | R | 9285 | Universal GCT | IADPSG | 0 | High |
| Alberico2014 | Italy | Developed | Europe | P | 14073 | Universal GCT | Other | NR | Medium |
| Alfadhli2015 | Saudi Arabia | Developing | Asia | P | 573 | Universal 1-step | IADPSG | 12.7 | High |
| Anderberg2010 | Sweden | Developed | Europe | P | 635 | Selective | Other | NR | Medium |
| Ardawi2000 | Saudi Arabia | Developing | Asia | P | 631 | Universal GCT | NDDG | NR | High |
| Aung2015 | the Cook Islands | Developing | Oceania | R | 520 | Universal GCT | Other | 2.2 | High |
| Barakat2010 | Oman | Developing | Asia | R | 458 | Universal GCT | WHO1999 | 100 | Medium |
| Bashir2021 | Qatar | Developing | Asia | R | 1733 | Universal 1-step | IADPSG | NA | High |
| Benhalima2013 | Belgium | Developed | Europe | R | 6505 | Universal GCT | IADPSG | 0 | High |
| Berggren2011 | USA | Developed | North America | R | 3577 | Universal GCT | CC | 0 | Medium |
| Biri2009 | Turkey | Developing | Asia | R | 1505 | Universal GCT | NDDG | NR | High |
| Bodmer-Roy2012 | Canada | Developed | North America | R | 558 | Universal GCT | IADPSG | 0 | Low |
| Cai2016 | Singapore | Developed | Asia | P | 462 | Universal 1-step | WHO1999 | NR | High |
| Catalano2012 | 9 countries | / | / | R | 23217 | Universal 1-step | IADPSG | 0 | Low |
| Chanprapaph2004 | Thailand | Developing | Asia | R | 576 | Selective | NDDG | NR | High |
| Cheung2018 | Australia | Developed | Oceania | R | 5248 | Universal 1-step | IADPSG | 0 | High |
| Chia1996 | Singapore | Developed | Asia | R | 3802 | Selective | Other | 5.4 | High |
| Chico2005 | Spain | Developed | Europe | R | 6189 | Universal GCT | CC | NA | High |
| Chou2010 | China | Developing | Asia | R | 10605 | Universal GCT | CC | 0.79 | High |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Cosson2006 | France | Developed | Europe | R | 1520 | Universal 1-step | WHO1999 | NA | Low |
| Cosson2013 | France | Developed | Europe | R | 10975 | Selective | WHO1999 | 11.3 | High |
| Davis2018 | USA | Developed | North America | R | 4372 | Universal GCT | IADPSG | 0 | Medium |
| de Lapertosa2021 | Argentina | Developing | South America | P | 1064 | Universal 1-step | IADPSG | NR | High |
| de Wit2021 | Netherlands | Developed | Europe | R | 2695 | Selective | IADPSG | 0 | High |
| Djelmis2016 | Croatia | Developing | Europe | R | 3800 | Universal 1-step | IADPSG | 0 | High |
| Domanski2018 | Germany | Developed | Europe | R | 4548 | Other | IADPSG | NR | Medium |
| Donovan2017 | Canada | Developed | North America | R | 150882 | Universal GCT | IADPSG | NR | Medium |
| Duran2014 | Spain | Developed | Europe | P | 1526 | Universal 1-step | IADPSG | 19.9 | High |
| Ekeroma2015 | New Zealand | Developed | Oceania | R | 1910 | Universal 1-step | IADPSG | 0 | Low |
| Erjavec2016 | Croatia | Developing | Europe | R | 39092 | Universal 1-step | IADPSG | NR | Medium |
| Ethridge2014 | USA | Developed | North America | R | 7280 | Universal GCT | IADPSG | NR | High |
| Feleke2021 | Ethiopia | Developing | Africa | P | 3459 | NR | Other | NR | High |
| Feng2017 | China | Developing | Asia | R | 14741 | Universal 1-step | IADPSG | NR | High |
| Forsbach1997 | Mexico | Developing | South America | R | 580 | Universal 1-step | WHO1999 | NR | High |
| Gasim2012 | Saudi Arabia | Developing | Asia | R | 440 | Selective | NDDG | 22.3 | Low |
| Gorgal2012 | Portugal | Developed | Europe | R | 880 | Universal GCT | CC | 12.7 | Low |
| Gortazar2019 | Spain | Developed | Europe | R | 739877 | Universal GCT | NDDG | NR | Medium |
| Gruendhammer2003 | Australia | Developed | Oceania | R | 456 | Universal GCT | CC | 54.1 | High |
| Gu2019 | China | Developing | Asia | R | 1967 | Universal GCT | WHO1999 | 4.51 | High |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| He2020 | China | Developing | Asia | R | 2108 | Universal 1-step | IADPSG | NR | High |
| Hedderson2003 | USA | Developed | North America | R | 39355 | Universal GCT | CC | 0 | Medium |
| Hildén2019 | Sweden | Developed | Europe | P | 1455667 | Other | Other | NR | Low |
| Hillier2008 | USA | Developed | North America | R | 28128 | Universal GCT | CC | 0 | Low |
| Hirst2012 | Vietnam | Developing | Asia | P | 2538 | Universal 1-step | IADPSG | 0 | Low |
| Hossein-Nezhad2007 | Iran | Developing | Asia | P | 1976 | Universal GCT | CC | NR | High |
| Huhn2017 | Switzerland | Developed | Europe | R | 720 | Universal GCT | IADPSG | 29.4 | High |
| Ikenoue2014 | Japan | Developed | Asia | R | 993 | Selective | IADPSG | 35.5 | High |
| Jain2016 | India | Developing | Asia | P | 15641 | Universal 1-step | Other | 6 | High |
| Jensen2003 | Denmark | Developed | Europe | P | 2885 | Selective | WHO1999 | 0 | Low |
| Jin2020 | China | Developing | Asia | R | 44179 | Universal 1-step | IADPSG | NR | High |
| Johns2006 | Canada | Developed | North America | R | 494 | Universal GCT | NDDG | 18.8 | High |
| Kalra2013 | India | Developing | Asia | P | 500 | Universal 1-step | Other | 42.4 | High |
| Kautzky-Willer2008 | Australia | Developed | Oceania | P | 22591 | Universal 1-step | CC | 49.4 | High |
| Keikkala2020 | Finland | Developed | Europe | P | 1936 | Universal 1-step | Other | NA | High |
| Keshavarz2005 | Iran | Developing | Asia | P | 1310 | Universal GCT | CC | 20.6 | High |
| Kgosidialwa2015 | Ireland | Developed | Europe | R | 3066 | Universal 1-step | IADPSG | 0 | Low |
| Kieffer1999 | USA | Developed | North America | P | 372 | Universal GCT | NDDG | NR | High |
| Kim2019 | Korea | Developed | Asia | P | 1969 | Universal GCT | IADPSG | 0 | Low |
| Kim2021 | Korea | Developed | Asia | R | 7099 | Universal GCT | CC | 10.4 | High |
| Kirke2014 | Australia | Developed | Oceania | R | 1636 | Universal GCT | Other | NA | High |

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|---|---|---|---|---|---|---|---|---|---|
| Koivunen2020 | Finland | Developed | Europe | P | 3081 | Selective | IADPSG | 0 | Low |
| Kösüs2013 | Turkey | Developing | Asia | R | 810 | Universal GCT | CC | NR | High |
| Kumari2018 | India | Developing | Asia | R | 361 | Universal 1-step | IADPSG | 12.4 | High |
| Laafira2016 | Australia | Developed | Oceania | R | 3105 | Universal 1-step | IADPSG | 0 | Low |
| Lai2016 | Canada | Developed | North America | R | 333589 | Universal GCT | Other | NR | Low |
| Langer2005 | USA | Developed | North America | R | 1665 | Universal GCT | CC | 0 | High |
| Lapolla2011 | Italy | Developed | Europe | R | 1927 | Universal GCT | IADPSG | 0 | High |
| Lee2018 | Korea | Developed | Asia | R | 1087 | Universal GCT | CC | 14.6 | High |
| Lee2020 | Korea | Developed | Asia | P | 2031 | Universal GCT | IADPSG | 0 | Low |
| Leybovitz-Haleluya2018 | Israel | Developed | Asia | R | 215473 | Universal GCT | Other | NA | High |
| Li2014 | China | Developing | Asia | R | 54275 | Universal GCT | Other | NR | Low |
| Li2020 | USA | Developed | North America | P | 2127 | Universal GCT | CC | NR | High |
| Lin2009 | China | Developing | Asia | P | 1867 | Universal GCT | Other | NR | High |
| Liu2020 | China | Developing | Asia | P | 352 | Universal 1-step | IADPSG | NR | High |
| Liu2020-2 | China | Developing | Asia | P | 410 | Universal 1-step | IADPSG | 4 | Low |
| Lopez-de-Andres2011 | Spain | Developed | Europe | R | 397928 | Universal GCT | Other | NR | High |
| Lu2016 | China | Developing | Asia | R | 9253 | Universal GCT | CC | 0 | Medium |
| Luengmettakul2015 | Thailand | Developing | Asia | R | 688 | Universal GCT | CC | 0 | Low |
| Macaulay2018 | South Africa | Developing | Africa | P | 725 | Universal 1-step | IADPSG | 1.2 | High |
| Mak2019 | China | Developing | Asia | P | 1326 | Universal 1-step | IADPSG | NR | Low |

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|---|---|---|---|---|---|---|---|---|---|
| Makwana2017 | India | Developing | Asia | P | 476 | Universal 1-step | Other | NR | High |
| Mallah1997 | Saudi Arabia | Developing | Asia | P | 9876 | Universal GCT | Other | 51.7 | High |
| Mayo2015 | Canada | Developed | North America | R | 4338 | Universal GCT | IADPSG | 0 | Medium |
| McIntyre2018 | Denmark | Developed | Europe | P | 1516 | Selective | IADPSG | NR | High |
| Mdoe2021 | Tanzania | Developing | Africa | P | 581 | Universal 1-step | IADPSG | NR | High |
| Meek2015 | UK | Developed | Europe | R | 22082 | Universal GCT | IADPSG | 0 | Low |
| Miailhe2015 | France | Developed | Europe | R | 2134 | Selective | IADPSG | 22.3 | Low |
| Minsart2014 | Djibouti | Developing | Africa | P | 374 | Universal 1-step | IADPSG | 6.1 | High |
| Miyakoshi2004 | Japan | Developed | Asia | R | 2512 | Universal GCT | Other | 8.2 | High |
| Morikawa2017 | Japan | Developed | Asia | P | 236145 | Universal 1-step | IADPSG | NA | High |
| Moses2000 | Australia | Developed | Oceania | R | 432 | Universal 1-step | Other | 16.8 | High |
| Muche2020 | Ethiopia | Developing | Africa | P | 684 | Universal 1-step | IADPSG | NR | Medium |
| Mwanri2014 | Tanzania | Developing | Africa | P | 910 | NR | WHO1999 | NR | High |
| Nasrat1996 | Saudi Arabia | Developing | Asia | P | 510 | Selective | Other | 14.4 | High |
| Nayak2013 | India | Developing | Asia | P | 304 | Universal 1-step | IADPSG | 9.6 | High |
| Nguyen2016 | Canada | Developed | North America | R | 3591 | Universal 1-step | Other | 52.1 | High |
| Nguyen2020 | Vietnam | Developing | Asia | P | 1769 | Universal 1-step | IADPSG | NR | High |
| Nicolosi2020 | Brazil | Developing | South America | P | 436 | Universal 1-step | Other | NR | High |
| Nielsen2021 | Denmark | Developed | Europe | R | 710413 | Selective | Other | NR | Low |
| Ogonowski2008 | Poland | Developing | Europe | R | 1535 | Universal GCT | WHO1999 | 37.2 | High |
| Ogonowski2015 | Poland | Developing | Europe | R | 1285 | Universal GCT | WHO1999 | 50.3 | High |

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|---|---|---|---|---|---|---|---|---|---|
| Oster2014 | Canada | Developed | North America | R | 28017 | Universal GCT | Other | NR | High |
| O'Sullivan2011 | Ireland | Developed | Europe | P | 5321 | Universal 1-step | IADPSG | 0 | Medium |
| Ovesen2015 | Denmark | Developed | Europe | P | 398623 | Selective | Other | NR | Low |
| Ozumba2004 | Nigeria | Developing | Africa | R | 400 | Selective | Other | 13.1 | High |
| Pan2015 | China | Developing | Asia | P | 16602 | Universal GCT | IADPSG | 3.3 | High |
| Park2015 | Korea | Developed | Asia | R | 2244 | Universal GCT | CC | 24.9 | High |
| Pavic2021 | Croatia | Developing | Europe | R | 1851 | Universal 1-step | IADPSG | 0 | High |
| Ramachandran1998 | India | Developing | Asia | P | 1062 | Universal 1-step | Other | NR | High |
| Redman2021 | USA | Developed | North America | P | 985 | Universal GCT | IADPSG | NR | Low |
| Ricart2005 | Spain | Developed | Europe | p | 6613 | Universal GCT | CC | 0 | Medium |
| Ryan2020 | Canada | Developed | North America | R | 221286 | Universal GCT | Other | 93.8 | High |
| Sacks2015 | USA | Developed | North America | R | 9835 | Universal 1-step | IADPSG | NR | High |
| Sagili2015 | India | Developing | Asia | P | 1200 | Selective | IADPSG | 4.5 | High |
| Saldana2003 | USA | Developed | North America | P | 2002 | Universal GCT | CC | NA | Medium |
| Savona-Ventura2003 | Malta | Developed | Europe | R | 12496 | NR | Other | 4.2 | High |
| Schwartz1999 | USA | Developed | North America | R | 4281 | Universal GCT | CC | 0 | High |
| Segregur2009 | Croatia | Developing | Europe | P | 1853 | NR | WHO1999 | 20.8 | High |
| Seval2016 | Turkey | Developing | Asia | R | 2312 | Universal GCT | CC | NR | High |
| Shah2019 | Canada | Developed | North America | R | 66673 | Universal GCT | IADPSG | 0 | Medium |

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|---|---|---|---|---|---|---|---|---|---|
| Shahbazian2016 | Iran | Developing | Asia | P | 750 | Universal 1-step | IADPSG | 17.6 | High |
| Shand2008 | Australia | Developed | Oceania | R | 365617 | Universal GCT | Other | NR | High |
| Shang2014 | China | Developing | Asia | P | 3083 | Selective | IADPSG | 11.4 | High |
| Shang2014-2 | China | Developing | Asia | R | 5504 | Universal GCT | IADPSG | 0 | High |
| Sheffield2002 | USA | Developed | North America | P | 144786 | Selective | NDDG | 10.1 | High |
| Shi2020 | China | Developing | Asia | P | 10412 | Universal 1-step | IADPSG | 51 | High |
| Shindo2020 | Japan | Developed | Asia | R | 3292 | Universal GCT | IADPSG | 0 | Medium |
| Shub2019 | Australia | Developed | Oceania | R | 718 | Universal 1-step | Other | NR | Low |
| Sirimarco2017 | Brazil | Developing | South America | P | 393 | Universal 1-step | IADPSG | NR | High |
| Sletner2017 | Norway | Developed | Europe | P | 533 | Universal 1-step | WHO1999 | NA | High |
| Soliman2018 | Italy | Developed | Europe | R | 12022 | Universal 1-step | IADPSG | NA | High |
| Soonthornpun2009 | Thailand | Developing | Asia | P | 728 | Universal 1-step | CC | 17.3 | High |
| Srichumchit2015 | Thailand | Developing | Asia | R | 21771 | Selective | NDDG | NR | High |
| Sugiyama2017 | Palau | Developing | Oceania | R | 1730 | Universal GCT | Other | NR | Medium |
| Sun1995 | China | Developing | Asia | P | 622 | Universal GCT | Other | NR | High |
| Svare2001 | Denmark | Developed | Europe | P | 609 | Selective | Other | 12.8 | High |
| Tan2017 | Australia | Developed | Oceania | R | 4709 | Universal 1-step | IADPSG | 0 | Medium |
| Tomić2013 | Croatia | Developing | Europe | R | 1002 | Selective | WHO1999 | 0.8 | High |
| Tong2021 | China | Developing | Asia | R | 48444 | Universal 1-step | IADPSG | NR | High |
| Vambergue2002 | France | Developed | Europe | P | 326 | Universal GCT | CC | NR | High |
| van Hoorn2002 | Australia | Developed | Oceania | R | 309 | Universal GCT | Other | NR | High |
| von Katterfeld2012 | Australia | Developed | Oceania | R | 147302 | Universal GCT | Other | NR | High |
| Wahabi2013 | Egypt | Developing | Africa | R | 3041 | Selective | Other | 3.9 | High |

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|---|---|---|---|---|---|---|---|---|---|
| Wahabi2017 | Saudi Arabia | Developing | Asia | P | 9305 | Universal 1-step | IADPSG | NR | High |
| Wahlberg2016 | Sweden | Developed | Europe | P | 5370 | NR | Other | NR | High |
| Wan2019 | Australia | Developed | Oceania | R | 32013 | Universal 1-step | Other | 36 | Low |
| Wang2021 | China | Developing | Asia | R | 8844 | Universal 1-step | IADPSG | NA | Low |
| Wei2014 | China | Developing | Asia | P | 22437 | Universal GCT | IADPSG | 0 | High |
| Wei2015 | China | Developing | Asia | R | 9803 | Universal 1-step | Other | 4.1 | High |
| Weijers2002 | Netherlands | Developed | Europe | P | 561 | Universal GCT | Other | NR | High |
| Wells2015 | Australia | Developed | Oceania | P | 1646 | Selective | Other | 40.1 | High |
| Xiong2001 | Canada | Developed | North America | R | 111419 | Universal GCT | NDDG | NR | Low |
| Yan2017 | China | Developing | Asia | R | 1591 | Universal 1-step | IADPSG | 1.7 | High |
| Zeki2018 | Australia | Developed | Oceania | R | 989380 | Universal GCT | Other | NR | Low |
| Zhang2018 | China | Developing | Asia | P | 386 | Universal 1-step | IADPSG | NR | High |
| Zhao2020 | China | Developing | Asia | R | 585 | Universal 1-step | IADPSG | 0 | High |

NR: Not reported; P: Prospective; R: Retrospective; ROB: Risk of bias; UK: United Kingdom; USA: United States America.

**Supplemental Table S13. Adjusted odds ratios extracted from included studies for adjusted associations between GDM and pregnancy outcomes**

13.1 Maternal outcomes

13.1.1 Pre-eclampsia

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Bodmer-Roy2012 | 2,7 | 2.4 | 0.92 | 6.27 |
| Catalano2012 | 1,4,6 | 1.74 | 1.43 | 2.11 |
| Gortazar2019 | 1,4 | 1.78 | 1.66 | 1.91 |
| Hirst2012 | 1,2,4,6,7 | 1.4 | 0.68 | 2.89 |
| Kgosidialwa2015 | 1,2,4,6 | 0.81 | 0.49 | 1.34 |
| Kim2019 | 1,2,6 | 6.9 | 1.84 | 25.87 |
| Lai2016 | 1,6,7 | 1.54 | 1.07 | 2.21 |
| Luengmettakul2015 | 1,2,6 | 1.6 | 0.7 | 4.1 |
| Meek2015 | 1,2,4,6 | 1.4 | 0.97 | 2.03 |
| O'Sullivan2011 | 1,2 | 1.1 | 0.7 | 1.8 |
| Ovesen2015 | 1,2,4,6 | 1.3 | 1.2 | 1.41 |
| Redman2021 | 1,2,3 | 1.63 | 0.78 | 3.42 |
| Shindo2020 | 1,2,4 | 0.89 | 0.42 | 1.71 |
| Wan2019 | 1,2 | 1.24 | 0.94 | 1.62 |
| Xiong2001 | 1,4,6 | 1.3 | 1.2 | 1.41 |

**13.1.2 Induction**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Anderberg2010 | 1 | 3.1 | 1.8 | 5.2 |
| Donovan2017 | 1,4,7 | 1.1 | 1 | 1.2 |
| Erjavec2016_data1 | 1,2 | 2.068 | 1.761 | 2.427 |
| Erjavec2016_data2 | 1,2 | 1.715 | 1.515 | 1.94 |
| Gasim2012 | 1,2,6,7 | 2.701 | 1.851 | 5.223 |
| Hirst2012 | 1,2,4,6,7 | 1.28 | 0.69 | 2.34 |
| Kim2019 | 1,2,6 | 1.31 | 0.68 | 2.5 |
| Koivunen2020 | 1,2,6 | 1.1 | 0.83 | 1.47 |
| Shub2019 | 1,2,6 | 2.48 | 1.61 | 3.84 |
| Tan2017 | 1 | 1.64 | 1.22 | 2.19 |
| Wan2019 | 1,2,4,6,7 | 1.36 | 1.2 | 1.54 |

**13.1.3 Instrumental delivery**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Anderberg2010 | 1 | 1.1 | 0.6 | 2.1 |
| Barakat2010 | 2,7 | 0.52 | 0.2 | 1.31 |
| Luengmettakul2015 | 1,2,6 | 0.5 | 0.2 | 1.4 |
| Meek2015 | 1,2,4,6 | 1 | 0.72 | 1.4 |

**13.1.4 Caesarean section**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Anderberg2010 | 1 | 2.1 | 1.4 | 3.2 |
| Barakat2010 | 2,7 | 2.7 | 1.17 | 4.03 |
| Davis2018 | 1,3 | 0.81 | 0.51 | 1.29 |
| Domanski2018 | 1,2 | 1.76 | 1.21 | 2.56 |
| Donovan2017 | 1,4,7 | 1.4 | 1.3 | 1.5 |
| Erjavec2016_data1 | 1,2 | 1.567 | 1.36 | 1.806 |
| Erjavec2016_data2 | 1,2 | 1.458 | 1.31 | 1.622 |
| Gasim2012 | 1,2,6,7 | 2.133 | 1.122 | 2.933 |
| Gortazar2019 | 1,4 | 1.1 | 1.07 | 1.12 |
| Jensen2003 | 1,2,3,4 | 1 | 0.7 | 1.4 |
| Kgosidialwa2015 | 1,2,4,6 | 0.94 | 0.75 | 1.17 |
| Koivunen2020 | 1,2,6 | 1.42 | 1.08 | 1.87 |
| Laafira2016 | 2,3 | 1.14 | 0.82 | 1.58 |
| Lai2016 | 1,6,7 | 1.57 | 1.25 | 1.96 |
| Lee2020 | 1,2,6 | 0.67 | 0.37 | 1.22 |
| Lu2016 | 1,2,4 | 1.11 | 0.82 | 1.5 |
| Luengmettakul2015 | 1,2,6 | 1.4 | 1.01 | 1.85 |
| Mak2019 | 1,2,6 | 1.37 | 0.98 | 1.91 |
| Mayo2015 | 1 | 1.4 | 1.01 | 1.2 |
| Meek2015 | 1,2,4,6 | 1.44 | 1.15 | 1.81 |
| O'Sullivan2011 | 1,2 | 1.3 | 1 | 1.6 |
| Redman2021 | 1,2,3 | 1.07 | 0.67 | 1.71 |
| Ricart2005 | 1,2 | 0.95 | 0.67 | 1.35 |
| Shindo2020 | 1,2,4 | 1.06 | 0.85 | 1.33 |
| Wan2019 | 1,2,6 | 1.19 | 1.05 | 1.35 |
| Wang2021 | 1,2,3,4,6 | 1.69 | 1.48 | 1.92 |
| Xiong2001 | 1,4,6 | 1.13 | 1.1 | 1.17 |

**13.1.5 Shoulder dystocia**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Davis2018 | 1,3 | 1.294 | 0.4 | 4.21 |
| Jensen2003 | 1,2,3,4 | 1.3 | 0.4 | 3.9 |
| Kgosidialwa2015 | 1,2,4,6 | 1.19 | 0.55 | 2.58 |
| Lai2016 | 1,6,7 | 1.32 | 1.24 | 1.41 |
| Lu2016 | 1,2,4 | 1.95 | 0.59 | 6.46 |
| Ovesen2015 | 1,2,4,6 | 1.72 | 1.4 | 2.11 |
| Redman2021 | 1,2,3 | 1.35 | 0.14 | 12.66 |

| | | | | |
|---|---|---|---|---|
| Shindo2020 | 1,2,4 | 1.08 | 0.46 | 2.26 |
| Wan2019 | 1,2 | 1.29 | 0.87 | 1.93 |

**13.1.6 PROM**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Xiong2001 | 1,4,6 | 1.13 | 1.06 | 1.2 |

**13.1.7 PPH**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Hirst2012 | 1,2,4,6,7 | 1 | 0.6 | 1.69 |
| Lu2016 | 1,2,4 | 1.26 | 0.39 | 4.08 |
| Luengmettakul2015 | 1,2,6 | 1.5 | 0.68 | 3.25 |
| Meek2015 | 1,2,4,6 | 0.69 | 0.25 | 1.86 |
| Ovesen2015 | 1,2,4,6 | 0.94 | 0.86 | 1.03 |
| Shub2019 | 1,2,6 | 0.84 | 0.48 | 1.48 |

**13.2 Neonatal outcomes**

**13.2.1 Stillbirth**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Meek2015 | 1,2,4,6 | 1.16 | 0.16 | 8.7 |
| Shindo2020 | 1,2,4 | 0.98 | 0.05 | 5.6 |
| Hildén2019 | 1,2,4,6,7 | 0.87 | 0.66 | 1.13 |
| Lai2016 | 1,6,7 | 0.63 | 0.5 | 0.8 |
| Ovesen2015 | 1,2,4,6 | 0.73 | 0.48 | 1.13 |
| Xiong2001 | 1,4,6 | 0.92 | 0.73 | 1.17 |

**13.2.2 Neonatal death**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Lai2016 | 1,6,7 | 0.6 | 0.44 | 0.82 |
| Sugiyama2017 | 1,2 | 4.93 | 1.53 | 15.89 |

**13.2.3 Congenital malformation**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Barakat2010 | 2,7 | 1.62 | 0.65 | 4.1 |
| Hildén2019 | 1,2,4,6,7 | 1.16 | 1.06 | 1.26 |
| Kgosidialwa2015 | 1,2,4,6 | 0.78 | 0.36 | 1.7 |

| | | | | |
|---|---|---|---|---|
| Lai2016 | 1,6,7 | 1.2 | 1.09 | 1.33 |
| Shub2019 | 1,2,6 | 0.9 | 0.26 | 3.56 |

**13.2.4 Preterm delivery**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Davis2018 | 1,3 | 1.423 | 0.75 | 2.71 |
| Hedderson2003 | 1 | 1.7 | 1.29 | 2.24 |
| Hirst2012 | 1,2,4,6,7 | 1.52 | 1.03 | 2.24 |
| Jensen2003 | 1,2,3,4 | 1.7 | 0.8 | 3.5 |
| Kgosidialwa2015 | 1,2,4,6 | 1.51 | 0.94 | 2.43 |
| Kim2019 | 1,2,6 | 1.86 | 0.96 | 3.59 |
| Lee2020 | 1,2,6 | 2.67 | 1.1 | 6.48 |
| Lu2016 | 1,2,4 | 1.53 | 0.99 | 2.37 |
| Meek2015 | 1,2,4,6 | 1.02 | 0.68 | 1.55 |
| O'Sullivan2011 | 1,2 | 1.7 | 1.1 | 2.6 |
| Ricart2005 | 1,2 | 0.53 | 0.21 | 1.21 |
| Wan2019 | 1,2,4 | 1.1 | 0.9 | 1.34 |
| Wang2021 | 1,2,3,4,6 | 1.32 | 1.07 | 1.64 |
| Barakat2010 | 2,7 | 0.92 | 0.43 | 1.96 |
| Cosson2006 | 1,2,6 | 1.43 | 0.8 | 5.57 |
| Gasim2012 | 1,2,6,7 | 2.012 | 1.058 | 4.861 |
| Anderberg2010 | 1 | 3.6 | 1.6 | 7.7 |
| Gortazar2019 | 1,4 | 1.3 | 1.26 | 1.33 |
| Hildén2019 | 1,2,4,6,7 | 1.87 | 1.76 | 1.98 |
| Lai2016 | 1,6,7 | 1.71 | 1.61 | 1.81 |
| Mak2019 | 1,2,6 | 1.87 | 0.62 | 5.58 |
| Nielsen2021 | 1,2,6 | 1.51 | 1.42 | 1.61 |
| Redman2021 | 1,2,3 | 0.89 | 0.38 | 2.07 |
| Xiong2001 | 1,4,6 | 1.13 | 1.08 | 1.18 |

**13.2.5 RDS**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Jensen2003 | 1,2,3,4 | 1.2 | 0.7 | 2.2 |
| Luengmettakul2015 | 1,2,6 | 0.6 | 0.1 | 2.3 |
| O'Sullivan2011 | 1,2 | 2 | 1.1 | 3.7 |
| Shindo2020 | 1,2,4 | 1.14 | 0.42 | 2.62 |
| Wan2019 | 1,2 | 1.57 | 1.19 | 2.08 |
| Domanski2018 | 1,2 | 1.59 | 0.89 | 2.81 |

**13.2.6 Low 1-min Apgar score**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Lu2016 | 1,2,4 | 1.2 | 0.43 | 3.35 |
| Meek2015 | 1,2,4,6 | 1.55 | 1.06 | 2.26 |
| Ricart2005 | 1,2 | 1.22 | 0.65 | 2.29 |
| Barakat2010 | 2,7 | 1.63 | 0.88 | 3.02 |

**13.2.7 Low 5-min Apgar score**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Anderberg2010 | 1 | 9.6 | 1.2 | 78 |
| Erjavec2016_data1 | 1,2 | 1.656 | 1.008 | 2.72 |
| Erjavec2016_data2 | 1,2 | 1.246 | 0.8 | 1.939 |
| Lai2016 | 1,6,7 | 1.12 | 1 | 1.25 |
| Lee2020 | 1,2,6 | 0.79 | 0.31 | 2.01 |
| Meek2015 | 1,2,4,6 | 1.36 | 0.43 | 4.38 |
| Ovesen2015 | 1,2,4,6 | 1.01 | 0.8 | 1.28 |
| Shindo2020 | 1,2,4 | 1.14 | 0.78 | 1.62 |
| Shub2019 | 1,2,6 | 0.6 | 0.17 | 2.3 |
| Wan2019 | 1,2 | 0.94 | 0.7 | 1.28 |

**13.2.8 Macrosomia**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Davis2018 | 1,2 | 1.876 | 1.08 | 3.25 |
| Ekeroma2015 | 1,2,6 | 2.31 | 1.43 | 3.73 |
| Hillier2008 | 1,3,6 | 1.4 | 1.06 | 1.86 |
| Jensen2003 | 1,2,3,4 | 1.5 | 1.1 | 2.2 |
| Kgosidialwa2015 | 1,2,4,6 | 0.48 | 0.37 | 0.64 |
| Kim2019 | 1,2,6 | 2.53 | 1.26 | 5.1 |
| Laafira2016 | 2,3,6 | 2.2 | 1.4 | 3.46 |
| Lee2020 | 1,2,6 | 2.84 | 1.08 | 7.47 |
| Lu2016 | 1,2,4 | 2.73 | 1.18 | 6.31 |
| Luengmettakul2015 | 1,2,6 | 2.9 | 1.03 | 8.17 |
| Meek2015 | 1,2,4,6 | 3.55 | 2.75 | 4.58 |
| O'Sullivan2011 | 1,2 | 1.2 | 0.7 | 2.1 |
| Ricart2005 | 1,2 | 1.45 | 0.83 | 2.52 |
| Shindo2020 | 1,2,4 | 0.8 | 0.32 | 1.71 |
| Barakat2010 | 2,7 | 3.03 | 1.36 | 6.75 |
| Gasim2012 | 1,2,6,7 | 2.67 | 1.232 | 5.514 |
| Liu2020-2 | 1,2,3,6 | 2.127 | 0.29 | 9.631 |

| | | | | |
|---|---|---|---|---|
| Saldana2003 | 1,2 | 1.1 | 0.6 | 2.1 |
| Wan2019 | 1,2,4,6 | 0.88 | 0.74 | 1.05 |
| Wang2021 | 1,2,3,4,6 | 1.69 | 1.34 | 2.13 |
| Alberico2014 | 2,3,6 | 2.1 | 1.5 | 3 |
| Gortazar2019 | 1,4 | 1.51 | 1.45 | 1.57 |
| Li2014 | 1,2,3,5,6 | 1.2 | 1 | 1.4 |
| Mak2019 | 1,2,6 | 1.54 | 0.71 | 3.37 |
| Redman2021 | 1,2,3 | 1.28 | 0.62 | 2.66 |

**13.2.9 LGA**

| **Study** | **Adjusted factors** | **OR** | **lci_OR** | **uci_OR** |
|---|---|---|---|---|
| Bodmer-Roy2012 | 1,2,6 | 1.58 | 0.79 | 3.13 |
| Catalano2012 | 1,2,4,7 | 2.19 | 1.93 | 2.47 |
| Davis2018 | 1,3 | 1.466 | 0.85 | 2.53 |
| Hirst2012 | 1,2,4,6,7 | 1.31 | 0.96 | 1.79 |
| Jensen2003 | 1,2,3,4 | 1.7 | 1.1 | 2.4 |
| Kgosidialwa2015 | 1,2,4,6 | 0.61 | 0.46 | 0.82 |
| Kim2019 | 1,2,6 | 2.39 | 1.5 | 3.81 |
| Koivunen2020 | 1,2,6 | 1.51 | 1.09 | 2.08 |
| Lee2020 | 1,2,6 | 2.81 | 1.47 | 5.38 |
| Luengmettakul2015 | 1,2,6 | 1.3 | 0.8 | 1.9 |
| Mayo2015 | 1 | 1.8 | 1.1 | 2.9 |
| Meek2015 | 1,2,4,6 | 3.12 | 2.44 | 3.98 |
| O'Sullivan2011 | 1,2 | 1.3 | 1 | 1.7 |
| Ricart2005 | 1,2 | 1.44 | 1.02 | 2.03 |
| Shindo2020 | 1,2,4 | 1.11 | 0.79 | 1.53 |
| Cosson2006 | 1,2,6 | 0.87 | 0.52 | 1.45 |
| Gasim2012 | 1,2,6,7 | 3.341 | 1.464 | 6.375 |
| Liu2020-2 | 1,2,3,6 | 4.095 | 1.173 | 12.544 |
| Miailhe2015 | 1,2,6,7 | 2.04 | 1.37 | 3.02 |
| Saldana2003 | 1,2 | 1.4 | 0.7 | 2.7 |
| Wan2019 | 1,2,4,6 | 1.47 | 1.24 | 1.73 |
| Wang2021 | 1,2,3,4,6 | 1.43 | 1.18 | 1.73 |
| Donovan2017 | 1,4,7 | 1.7 | 1.6 | 1.9 |
| Gortazar2019-1st interval | 1,4 | 1.56 | 1.51 | 1.6 |
| Lai2016 | 1,6,7 | 1.75 | 1.68 | 1.83 |
| Mak2019 | 1,2,6 | 0.71 | 0.38 | 1.3 |
| Muche2020 | 1,6 | 2.38 | 1.41 | 4.03 |
| Redman2021 | 1,2,3 | 1.95 | 1.05 | 3.62 |
| Shub2019 | 1,2,6 | 0.6 | 0.4 | 1.02 |
| Xiong2001 | 1,4,6 | 1.43 | 1.37 | 1.5 |

**13.2.10 LBW**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Lu2016 | 1,2,4 | 1.64 | 1.01 | 2.64 |
| Luengmettakul2015 | 1,2,6 | 1.1 | 0.59 | 1.96 |
| Barakat2010 | 2,7 | 0.96 | 0.39 | 2.37 |
| Wang2021 | 1,2,3,4,6 | 0.86 | 0.59 | 1.25 |
| Mak2019 | 1,2,6 | 0.69 | 0.08 | 5.57 |
| Xiong2001 | 1,4,6 | 0.94 | 0.89 | 1 |

**13.2.11 SGA**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Hirst2012 | 1,2,4,6,7 | 0.89 | 0.58 | 1.37 |
| Kgosidialwa2015 | 1,2,4,6 | 0.81 | 0.49 | 1.34 |
| Kim2019 | 1,2,6 | 0.75 | 0.38 | 1.47 |
| Lee2020 | 1,2,6 | 0.21 | 0.03 | 1.52 |
| Meek2015 | 1,2,4,6 | 0.5 | 0.32 | 0.79 |
| O'Sullivan2011 | 1,2,4 | 1.6 | 1 | 2.5 |
| Shindo2020 | 1,2,4 | 0.85 | 0.59 | 1.2 |
| Miailhe2015 | 1,2,6,7 | 0.5 | 0.28 | 0.9 |
| Wan2019 | 1,2,4 | 0.87 | 0.67 | 1.13 |
| Wang2021 | 1,2,3,4,6 | 0.75 | 0.56 | 1.01 |
| Gortazar2019 | 1,4 | 0.89 | 0.85 | 0.92 |
| Lai2016 | 1,6,7 | 0.92 | 0.87 | 0.97 |
| Mak2019 | 1,2,6 | 2.77 | 1.45 | 5.31 |
| Redman2021 | 1,2,3 | 1.86 | 0.91 | 3.79 |
| Xiong2001 | 1,4,6 | 1 | 0.94 | 1.08 |

**13.2.12 Neonatal hypoglycemia**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|
| Kim2019 | 1,2,6 | 3.84 | 1.01 | 14.74 |
| Luengmettakul2015 | 1,2,6 | 12.3 | 2.9 | 52.73 |
| Shindo2020 | 1,2,4 | 1.84 | 0.71 | 4.2 |
| Domanski2018 | 1,2 | 11.71 | 7.49 | 18.3 |

**13.2.13 Neonatal jaundice**

| Study | Adjusted factors | OR | lci_OR | uci_OR |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Hirst2012 | 1,2,4,6,7 | 1.12 | 0.65 | 1.91 |
| Jensen2003 | 1,2,3,4 | 0.5 | 0.2 | 1.6 |
| Kim2019 | 1,2,6 | 1.57 | 1.07 | 2.31 |
| Lee2020 | 1,2,6 | 1.17 | 0.64 | 2.14 |
| Shindo2020 | 1,2,4 | 1.48 | 0.98 | 2.1 |
| Cosson2006 | 1,2,6 | 1.2 | 0.53 | 2.71 |
| Wan2019 | 1,2 | 1.29 | 1.04 | 1.61 |

**13.2.14 NICU admission**

| **Study** | **Adjusted factors** | **OR** | **lci_OR** | **uci_OR** |
|---|---|---|---|---|
| Hirst2012 | 1,2,4,6,7 | 1.12 | 0.65 | 1.91 |
| Kgosidialwa2015 | 1,2,4,6 | 2.16 | 1.6 | 2.91 |
| Kim2019 | 1,2,6 | 0.67 | 0.3 | 1.24 |
| Lee2020 | 1,2,6 | 0.79 | 0.31 | 2.01 |
| Lu2016 | 1,2,4 | 1.61 | 1.05 | 2.46 |
| Meek2015 | 1,2,4,6 | 0.76 | 0.45 | 1.29 |
| O'Sullivan2011 | 1,2 | 3.9 | 3 | 5.1 |
| Shindo2020 | 1,2,4 | 1.32 | 0.83 | 2.04 |
| Tan2017 | 1 | 1 | 0.63 | 1.59 |
| Barakat2010 | 2,7 | 2.85 | 1.68 | 4.83 |
| Gasim2012 | 1,2,6,7 | 2.954 | 1.732 | 6.805 |
| Liu2020-2 | 1,2,3,6 | 3.518 | 0.464 | 18.04 |
| Wan2019 | 1,2,4 | 1.96 | 1.71 | 2.24 |
| Anderberg2010 | 1 | 5.2 | 2.8 | 9.6 |
| Domanski2018 | 1,2 | 4.18 | 3.09 | 5.65 |
| Lai2016 | 1,6,7 | 1.6 | 1.54 | 1.67 |
| Mak2019 | 1,2,6 | 2.13 | 1.31 | 3.46 |
| Redman2021 | 1,2,3 | 1.4 | 0.75 | 2.62 |
| Shub2019 | 1,2,6 | 1.4 | 0.85 | 2.29 |

Note:

Adjusted factors means the confounding factors adjusted by the study. 1 to 6 represents maternal age, pre-gestational BMI, gestational weight gain, smoking, gravidity, parity, and chronic hypertension, respectively;

OR means the adjusted odds ratio;

lci_OR means the lower limit of 95% confidence interval;

uci_OR means the upper limit of 95% confidence interval.

**Supplemental Table S14. Raw data extracted from included studies for unadjusted associations between GDM and pregnancy outcomes**

**14.1. Maternal outcomes**

**14.1.1 Pre-eclampsia**

| Study | Event.GDM | GDM | Event.control | Control |
|---|---|---|---|---|
| Abell2017 | 37 | 958 | 205 | 8327 |
| Bashir2021 | 11 | 402 | 30 | 1331 |
| Benhalima2013 | 1 | 160 | 38 | 6345 |
| Berggren2011 | 58 | 460 | 264 | 3117 |
| Biri2009 | 2 | 73 | 21 | 1432 |
| Bodmer-Roy2012 | 12 | 186 | 10 | 372 |
| Catalano2012 | 296 | 3248 | 820 | 18116 |
| Cheung2018 | 13 | 375 | 78 | 4873 |
| Cosson2006 | 3 | 265 | 17 | 1255 |
| Cosson2013 | 55 | 1770 | 198 | 9205 |
| Ekeroma2015 | 15 | 238 | 96 | 1672 |
| Gortazar2019 | 916 | 35729 | 10115 | 704148 |
| He2020 | 18 | 1054 | 18 | 1054 |
| Hirst2012 | 10 | 386 | 35 | 2152 |
| Hossein-Nezhad2007 | 5 | 114 | 37 | 1862 |
| Huhn2017 | 2 | 85 | 10 | 635 |
| Ikenoue2014 | 2 | 141 | 17 | 852 |
| Keikkala2020 | 70 | 1144 | 28 | 1066 |
| Keshavarz2005 | 4 | 63 | 45 | 1247 |
| Kgosidialwa2015 | 24 | 567 | 95 | 2499 |
| Kim2019 | 4 | 131 | 7 | 1838 |
| Kirke2014 | 2 | 73 | 46 | 1563 |
| Lai2016 | 663 | 18542 | 5607 | 311673 |
| Lee2018 | 11 | 247 | 8 | 840 |
| Leybovitz-Haleluya2018 | 658 | 9460 | 8062 | 206013 |
| Lin2009 | 28 | 617 | 33 | 1250 |
| Luengmettakul2015 | 16 | 343 | 10 | 345 |
| Mallah1997 | 19 | 972 | 80 | 8904 |
| Mayo2015 | 4 | 155 | 33 | 4183 |
| McIntyre2018 | 58 | 620 | 46 | 896 |
| Mdoe2021 | 11 | 159 | 7 | 422 |
| Meek2015 | 39 | 387 | 1147 | 21695 |
| Miyakoshi2004 | 2 | 49 | 53 | 2463 |
| Nguyen2016 | 47 | 1731 | 33 | 1860 |
| Nguyen2020 | 3 | 425 | 2 | 1344 |
| Nielsen2021 | 939 | 18746 | 19262 | 679796 |
| O'Sullivan2011 | 39 | 619 | 176 | 4400 |

| | | | | |
|---|---|---|---|---|
| Ovesen2015 | 739 | 9014 | 15195 | 389609 |
| Pavic2021 | 2 | 521 | 1 | 1330 |
| Redman2021 | 10 | 102 | 61 | 883 |
| Shahbazian2016 | 8 | 224 | 5 | 526 |
| Shand2008 | 1117 | 16727 | 15336 | 349933 |
| Shang2014 | 44 | 612 | 140 | 2471 |
| Shang2014-2 | 13 | 158 | 148 | 5346 |
| Shindo2020 | 10 | 503 | 50 | 2789 |
| Svare2001 | 23 | 323 | 11 | 295 |
| Vambergue2002 | 6 | 218 | 0 | 108 |
| van Hoorn2002 | 10 | 51 | 44 | 258 |
| von Katterfeld2012 | 400 | 4765 | 7127 | 142537 |
| Wan2019 | 75 | 1579 | 963 | 30434 |
| Wei2015 | 69 | 2133 | 196 | 7670 |
| Wells2015 | 6 | 364 | 36 | 1282 |
| Xiong2001 | 74 | 2755 | 1195 | 108664 |

**14.1.2 Induction**

| **Study** | **Event.GDM** | **GDM** | **Event.control** | **Control** |
|---|---|---|---|---|
| Alfadhli2015 | 33 | 292 | 15 | 281 |
| Anderberg2010 | 57 | 306 | 21 | 329 |
| Bashir2021 | 61 | 402 | 136 | 1331 |
| Berggren2011 | 149 | 460 | 772 | 3117 |
| Cheung2018 | 46 | 375 | 400 | 4873 |
| de Wit2021 | 97 | 511 | 335 | 1925 |
| Donovan2017 | 1274 | 4308 | 39611 | 144191 |
| Ekeroma2015 | 53 | 238 | 355 | 1672 |
| Gasim2012 | 70 | 220 | 27 | 220 |
| He2020 | 208 | 1054 | 263 | 1054 |
| Hedderson2003 | 113 | 840 | 5585 | 38515 |
| Hirst2012 | 14 | 386 | 58 | 2152 |
| Keikkala2020 | 515 | 1146 | 342 | 1066 |
| Kim2019 | 12 | 131 | 149 | 1838 |
| Koivunen2020 | 67 | 389 | 414 | 2692 |
| Lai2016 | 6050 | 18542 | 67498 | 311673 |
| Mayo2015 | 17 | 155 | 461 | 4183 |
| Minsart2014 | 36 | 106 | 95 | 268 |
| Muche2020 | 24 | 118 | 67 | 566 |
| Nayak2013 | 13 | 83 | 27 | 221 |
| Oster2014 | 534 | 1224 | 6377 | 26793 |
| Ryan2020 | 5114 | 12942 | 56817 | 208344 |
| Shand2008 | 5462 | 16727 | 83659 | 349933 |

| | | | | |
|---|---|---|---|---|
| Shang2014 | 119 | 612 | 497 | 2471 |
| Shub2019 | 78 | 171 | 181 | 547 |
| Soliman2018 | 506 | 3027 | 797 | 8995 |
| Svare2001 | 144 | 325 | 35 | 293 |
| von Katterfeld2012 | 2587 | 4765 | 53166 | 142537 |
| Wahabi2017 | 420 | 2354 | 1108 | 6951 |
| Wan2019 | 672 | 1579 | 11309 | 30434 |

**14.1.3 Instrumental delivery**

| Study | Event.GDM | GDM | Event.control | Control |
|---|---|---|---|---|
| Anderberg2010 | 20 | 306 | 18 | 329 |
| Barakat2010 | 16 | 213 | 21 | 245 |
| Berggren2011 | 30 | 460 | 252 | 3117 |
| Bodmer-Roy2012 | 17 | 186 | 34 | 372 |
| Chia1996 | 32 | 411 | 232 | 3391 |
| Chico2005 | 177 | 422 | 2249 | 5767 |
| Cosson2006 | 29 | 265 | 155 | 1255 |
| de Wit2021 | 29 | 518 | 124 | 1938 |
| Ekeroma2015 | 13 | 238 | 111 | 1672 |
| Feleke2021 | 54 | 862 | 70 | 2597 |
| Gorgal2012 | 51 | 177 | 158 | 571 |
| Kalra2013 | 1 | 33 | 4 | 467 |
| Kirke2014 | 9 | 73 | 197 | 1563 |
| Koivunen2020 | 30 | 389 | 242 | 2692 |
| Kumari2018 | 8 | 170 | 4 | 191 |
| Luengmettakul2015 | 6 | 343 | 12 | 345 |
| Meek2015 | 50 | 387 | 2802 | 21695 |
| Miailhe2015 | 44 | 256 | 390 | 1878 |
| Minsart2014 | 42 | 106 | 108 | 268 |
| Nguyen2016 | 189 | 1731 | 221 | 1860 |
| Sagili2015 | 9 | 155 | 70 | 1045 |
| Svare2001 | 23 | 327 | 30 | 294 |
| Tan2017 | 83 | 197 | 1742 | 4512 |
| van Hoorn2002 | 14 | 51 | 66 | 258 |
| Wahabi2017 | 84 | 2354 | 284 | 6951 |

**14.1.4 Caesarean section**

| Study | Event.GDM | GDM | Event.control | Control |
|---|---|---|---|---|
| Abell2017 | 322 | 958 | 2176 | 8327 |
| Anderberg2010 | 72 | 306 | 39 | 329 |
| Ardawi2000 | 24 | 102 | 67 | 529 |
| Aung2015 | 24 | 94 | 51 | 463 |

| | | | | |
|---|---|---|---|---|
| Barakat2010 | 56 | 213 | 21 | 245 |
| Bashir2021 | 168 | 402 | 462 | 1331 |
| Benhalima2013 | 160 | 460 | 942 | 3117 |
| Biri2009 | 50 | 73 | 785 | 1432 |
| Bodmer-Roy2012 | 31 | 186 | 45 | 372 |
| Chanprapaph2004 | 8 | 29 | 64 | 547 |
| Chia1996 | 85 | 411 | 468 | 3391 |
| Chico2005 | 122 | 422 | 1442 | 5767 |
| Chou2010 | 196 | 489 | 3761 | 10116 |
| Cosson2006 | 66 | 265 | 237 | 1255 |
| Cosson2013 | 485 | 1770 | 1900 | 9205 |
| Davis2018 | 51 | 181 | 1267 | 4941 |
| de Lapertosa2021 | 138 | 285 | 365 | 779 |
| de Wit2021 | 144 | 510 | 436 | 1919 |
| Djelmis2016 | 80 | 409 | 412 | 3391 |
| Domanski2018 | 90 | 224 | 1116 | 4310 |
| Donovan2017 | 1561 | 4308 | 37455 | 144191 |
| Duran2014 | 120 | 542 | 182 | 984 |
| Ekeroma2015 | 84 | 238 | 461 | 1672 |
| Ethridge2014 | 82 | 281 | 1610 | 6999 |
| Feleke2021 | 347 | 862 | 185 | 2597 |
| Feng2017 | 1435 | 2927 | 4790 | 11814 |
| Gasim2012 | 53 | 220 | 27 | 220 |
| Gruendhammer2003 | 50 | 152 | 61 | 304 |
| He2020 | 377 | 1054 | 348 | 1054 |
| Hedderson2003 | 223 | 840 | 5662 | 38515 |
| Hossein-Nezhad2007 | 54 | 114 | 523 | 1862 |
| Jain2016 | 2242 | 7641 | 1814 | 8000 |
| Jensen2003 | 54 | 289 | 450 | 2596 |
| Johns2006 | 143 | 394 | 23 | 100 |
| Kalra2013 | 26 | 33 | 143 | 467 |
| Kautzky-Willer2008 | 203 | 672 | 195 | 794 |
| Keikkala2020 | 234 | 1146 | 143 | 1066 |
| Keshavarz2005 | 55 | 63 | 718 | 1247 |
| Kgosidialwa2015 | 172 | 567 | 610 | 2499 |
| Kirke2014 | 35 | 73 | 481 | 1563 |
| Koivunen2020 | 81 | 389 | 402 | 2692 |
| K?süs2013 | 48 | 70 | 281 | 499 |
| Kumari2018 | 85 | 170 | 106 | 191 |
| Laafira2016 | 87 | 203 | 997 | 2902 |
| Lai2016 | 6986 | 18542 | 79492 | 311673 |
| Langer2005 | 132 | 555 | 158 | 1110 |
| Lapolla2011 | 49 | 112 | 564 | 1815 |

| | | | | |
|---|---|---|---|---|
| Lee2020 | 17 | 52 | 758 | 1979 |
| Leybovitz-Haleluya2018 | 2432 | 9460 | 27289 | 206013 |
| Li2020 | 41 | 107 | 574 | 2020 |
| Lin2009 | 270 | 617 | 409 | 1250 |
| Liu2020 | 26 | 66 | 80 | 286 |
| Lopez-de-Andres2011 | 3460 | 14297 | 73274 | 383631 |
| Lu2016 | 101 | 251 | 2721 | 9002 |
| Luengmettakul2015 | 190 | 343 | 165 | 345 |
| Macaulay2018 | 60 | 82 | 362 | 643 |
| Mak2019 | 108 | 210 | 463 | 1116 |
| Mallah1997 | 165 | 972 | 668 | 8904 |
| Mayo2015 | 57 | 155 | 1093 | 4183 |
| McIntyre2018 | 130 | 620 | 194 | 896 |
| Meek2015 | 147 | 387 | 5386 | 21695 |
| Miailhe2015 | 72 | 256 | 373 | 1878 |
| Muche2020 | 41 | 118 | 87 | 566 |
| Nasrat1996 | 24 | 173 | 48 | 337 |
| Nguyen2016 | 488 | 1731 | 461 | 1860 |
| Nguyen2020 | 184 | 425 | 493 | 1344 |
| Nielsen2021 | 5719 | 18746 | 137163 | 679796 |
| Oster2014 | 400 | 1224 | 5117 | 26793 |
| O'Sullivan2011 | 246 | 661 | 1165 | 4679 |
| Ovesen2015 | 2794 | 9014 | 76753 | 389609 |
| Ozumba2004 | 24 | 200 | 31 | 200 |
| Pan2015 | 307 | 429 | 10197 | 16173 |
| Park2015 | 882 | 1781 | 144 | 463 |
| Pavic2021 | 104 | 521 | 184 | 1330 |
| Redman2021 | 40 | 102 | 307 | 883 |
| Ricart2005 | 59 | 263 | 1219 | 6350 |
| Ryan2020 | 4760 | 12942 | 53433 | 208344 |
| Sacks2015 | 647 | 1892 | 2102 | 7943 |
| Sagili2015 | 24 | 155 | 96 | 1045 |
| Schwartz1999 | 38 | 154 | 1110 | 7207 |
| Segregur2009 | 132 | 351 | 134 | 1502 |
| Seval2016 | 29 | 65 | 829 | 2247 |
| Shahbazian2016 | 152 | 224 | 298 | 526 |
| Shand2008 | 5048 | 16727 | 73163 | 349933 |
| Shang2014 | 336 | 612 | 1211 | 2471 |
| Shang2014-2 | 126 | 158 | 3353 | 5346 |
| Shindo2020 | 138 | 503 | 662 | 2789 |
| Soliman2018 | 1115 | 3027 | 2584 | 8995 |
| Srichumchit2015 | 457 | 1350 | 4226 | 20421 |

| | | | | |
|---|---|---|---|---|
| Sugiyama2017 | 52 | 95 | 544 | 1635 |
| Svare2001 | 61 | 327 | 46 | 294 |
| Tomi?2013 | 78 | 341 | 133 | 661 |
| Tong2021 | 3378 | 6998 | 17048 | 41446 |
| van Hoorn2002 | 16 | 51 | 66 | 258 |
| von Katterfeld2012 | 1906 | 4765 | 40338 | 142537 |
| Wahabi2013 | 146 | 569 | 465 | 2472 |
| Wahabi2017 | 675 | 2354 | 1657 | 6951 |
| Wan2019 | 579 | 1579 | 8473 | 30434 |
| Wang2021 | 737 | 1229 | 3490 | 7615 |
| Wei2014 | 732 | 1175 | 10689 | 21629 |
| Wei2015 | 1085 | 2133 | 3285 | 7670 |
| Xiong2001 | 686 | 2755 | 17604 | 108664 |
| Yan2017 | 101 | 116 | 987 | 1475 |
| Zeki2018 | 18683 | 50799 | 267848 | 938581 |
| Zhao2020 | 30 | 57 | 258 | 528 |

**14.1.5 Shoulder dystocia**

| **Study** | **Event.GDM** | **GDM** | **Event.control** | **Control** |
|---|---|---|---|---|
| Abell2017 | 30 | 958 | 151 | 8327 |
| Alfadhli2015 | 1 | 292 | 1 | 281 |
| Barakat2010 | 3 | 213 | 1 | 245 |
| Bashir2021 | 2 | 402 | 4 | 1331 |
| Benhalima2013 | 6 | 160 | 89 | 6345 |
| Berggren2011 | 24 | 460 | 109 | 3117 |
| Bodmer-Roy2012 | 2 | 186 | 6 | 372 |
| Cheung2018 | 32 | 375 | 357 | 4873 |
| Chou2010 | 2 | 489 | 11 | 10116 |
| Cosson2006 | 5 | 265 | 17 | 1255 |
| Cosson2013 | 30 | 1770 | 134 | 9205 |
| Davis2018 | 6 | 181 | 104 | 4941 |
| de Wit2021 | 7 | 538 | 26 | 2000 |
| Ethridge2014 | 2 | 281 | 58 | 6999 |
| Gruendhammer2003 | 3 | 152 | 0 | 304 |
| Huhn2017 | 0 | 85 | 1 | 635 |
| Jensen2003 | 8 | 289 | 33 | 2596 |
| Kalra2013 | 1 | 33 | 3 | 467 |
| Keikkala2020 | 5 | 1146 | 4 | 1066 |
| Kgosidialwa2015 | 9 | 567 | 39 | 2499 |
| Kirke2014 | 4 | 73 | 38 | 1563 |
| Langer2005 | 14 | 555 | 7 | 1110 |
| Lu2016 | 3 | 150 | 64 | 640 |

| | | | | |
|---|---|---|---|---|
| Mayo2015 | 3 | 155 | 78 | 4183 |
| Miailhe2015 | 1 | 256 | 10 | 1878 |
| Nguyen2016 | 24 | 1731 | 24 | 1860 |
| Ovesen2015 | 153 | 9014 | 3506 | 389609 |
| Redman2021 | 1 | 102 | 6 | 883 |
| Sacks2015 | 61 | 1892 | 175 | 7943 |
| Shand2008 | 245 | 16727 | 3732 | 349933 |
| Shindo2020 | 8 | 503 | 36 | 2789 |
| Srichumchit2015 | 9 | 1350 | 19 | 20421 |
| Svare2001 | 11 | 261 | 3 | 248 |
| Tong2021 | 219 | 6998 | 1646 | 41446 |
| von Katterfeld2012 | 119 | 4765 | 2423 | 142537 |
| Wahabi2017 | 8 | 2354 | 26 | 6951 |
| Wan2019 | 33 | 1579 | 515 | 30434 |

**14.1.6 PROM**

| Study | Event.GDM | GDM | Event.control | Control |
|---|---|---|---|---|
| Alfadhli2015 | 27 | 292 | 37 | 281 |
| Chanprapaph2004 | 0 | 29 | 44 | 547 |
| Feleke2021 | 153 | 862 | 245 | 2597 |
| He2020 | 146 | 1054 | 152 | 1054 |
| Kalra2013 | 6 | 33 | 21 | 467 |
| Lee2018 | 38 | 247 | 148 | 840 |
| Muche2020 | 20 | 118 | 47 | 566 |
| Nayak2013 | 2 | 83 | 3 | 221 |
| Shahbazian2016 | 7 | 224 | 9 | 526 |
| Sun1995 | 13 | 44 | 40 | 578 |
| Xiong2001 | 127 | 2755 | 3586 | 108664 |
| Yan2017 | 10 | 116 | 87 | 1475 |
| Zhang2018 | 42 | 186 | 23 | 200 |

**14.1.7 PPH**

| Study | Event.GDM | GDM | Event.control | Control |
|---|---|---|---|---|
| Chou2010 | 4 | 489 | 83 | 10116 |
| Ethridge2014 | 4 | 281 | 84 | 6999 |
| Feleke2021 | 105 | 862 | 183 | 2597 |
| Hirst2012 | 16 | 386 | 93 | 2152 |
| Kalra2013 | 7 | 33 | 64 | 467 |
| Kumari2018 | 2 | 170 | 1 | 191 |
| Lu2016 | 3 | 251 | 76 | 9002 |
| Luengmettakul2015 | 16 | 343 | 11 | 345 |
| Mayo2015 | 3 | 155 | 64 | 4183 |

| | | | | |
|---|---|---|---|---|
| Meek2015 | 4 | 387 | 344 | 21695 |
| Nguyen2020 | 6 | 425 | 13 | 1344 |
| Ovesen2015 | 532 | 9014 | 24545 | 389609 |
| Shand2008 | 1053 | 16727 | 20905 | 349933 |
| Shang2014-2 | 4 | 158 | 48 | 5346 |
| Shub2019 | 18 | 171 | 70 | 547 |
| Zhao2020 | 6 | 57 | 47 | 528 |

**14.2 Neonatal outcomes**

**14.2.1 Stillbirth**

| Study | Event.GDM | GDM | Event.control | Control |
|---|---|---|---|---|
| Chou2010 | 1 | 489 | 42 | 10116 |
| Hossein-Nezhad2007 | 6 | 114 | 21 | 1862 |
| Kautzky-Willer2008 | 10 | 274 | 250 | 22317 |
| Keshavarz2005 | 4 | 63 | 5 | 1247 |
| Langer2005 | 3 | 555 | 2 | 1110 |
| Schwartz1999 | 1 | 154 | 16 | 7207 |
| Alfadhli2015 | 7 | 292 | 8 | 281 |
| Bashir2021 | 5 | 402 | 9 | 1331 |
| Donovan2017 | 13 | 4416 | 343 | 146466 |
| Ekeroma2015 | 1 | 238 | 10 | 1672 |
| McIntyre2018 | 2 | 620 | 1 | 896 |
| Meek2015 | 1 | 387 | 77 | 21695 |
| Morikawa2017 | 46 | 13037 | 1562 | 223108 |
| Nguyen2020 | 1 | 425 | 7 | 1344 |
| Pan2015 | 1 | 429 | 106 | 16173 |
| Shindo2020 | 1 | 503 | 7 | 2789 |
| Soliman2018 | 9 | 3027 | 69 | 8995 |
| Wahabi2017 | 22 | 2354 | 60 | 6951 |
| Srichumchit2015 | 19 | 1350 | 299 | 20421 |
| Xiong2001 | 8 | 2755 | 326 | 108664 |
| Hildén2019 | 58 | 14833 | 4852 | 1440834 |
| Jain2016 | 247 | 7641 | 102 | 8000 |
| Kalra2013 | 3 | 33 | 7 | 467 |
| Lai2016 | 75 | 18947 | 2053 | 316770 |
| Mallah1997 | 5 | 972 | 53 | 8904 |
| Oster2014 | 21 | 1224 | 322 | 26793 |
| Ovesen2015 | 26 | 9014 | 1442 | 389609 |
| Ramachandran1998 | 5 | 211 | 3 | 851 |
| Shand2008 | 55 | 16727 | 988 | 349933 |
| Wan2019 | 7 | 1579 | 394 | 30434 |

| | | | | |
|---|---|---|---|---|
| Barakat2010 | 3 | 213 | 6 | 245 |

**14.2.2 Neonatal death**

| Study | Event.GDM | GDM | Event.control | Control |
|---|---|---|---|---|
| Alfadhli2015 | 13 | 292 | 3 | 281 |
| Donovan2017 | 6 | 4416 | 150 | 146466 |
| Jain2016 | 128 | 7641 | 56 | 8000 |
| Lai2016 | 49 | 18872 | 1366 | 314717 |
| Lin2009 | 4 | 617 | 0 | 1250 |
| Nguyen2016 | 9 | 1731 | 9 | 1860 |
| Pan2015 | 2 | 429 | 13 | 16173 |
| Soliman2018 | 5 | 3027 | 27 | 8995 |
| Soonthornpun2009 | 0 | 51 | 6 | 677 |
| Sugiyama2017 | 4 | 95 | 14 | 1635 |
| Svare2001 | 2 | 313 | 1 | 288 |
| Wan2019 | 7 | 1579 | 206 | 30434 |

**14.2.3 Congenital malformation**

| Study | Event.GDM | GDM | Event.control | Control |
|---|---|---|---|---|
| Alfadhli2015 | 20 | 292 | 12 | 281 |
| Barakat2010 | 19 | 213 | 10 | 245 |
| Chanprapaph2004 | 0 | 29 | 1 | 547 |
| Chico2005 | 8 | 422 | 81 | 5767 |
| Gasim2012 | 3 | 220 | 4 | 220 |
| Gruendhammer2003 | 10 | 152 | 17 | 304 |
| Hildén2019 | 611 | 14833 | 49938 | 1440834 |
| Jain2016 | 382 | 7641 | 82 | 8000 |
| Kautzky-Willer2008 | 6 | 274 | 259 | 22317 |
| Keshavarz2005 | 1 | 63 | 5 | 1247 |
| Kgosidialwa2015 | 10 | 567 | 35 | 2499 |
| Kumari2018 | 8 | 170 | 3 | 191 |
| Lai2016 | 477 | 18872 | 6558 | 314717 |
| Nicolosi2020 | 5 | 207 | 6 | 229 |
| Oster2014 | 11 | 1224 | 482 | 26793 |
| O'Sullivan2011 | 15 | 659 | 70 | 4662 |
| Pavic2021 | 5 | 521 | 11 | 1330 |
| Ramachandran1998 | 5 | 211 | 8 | 851 |
| Ricart2005 | 2 | 263 | 102 | 6350 |
| Savona-Ventura2003 | 4 | 236 | 318 | 12260 |
| Sheffield2002 | 35 | 2277 | 2075 | 142509 |
| Shub2019 | 3 | 171 | 12 | 547 |

| | | | | |
|---|---|---|---|---|
| Soliman2018 | 32 | 3027 | 80 | 8995 |
| Svare2001 | 3 | 302 | 4 | 287 |
| Tomi?2013 | 3 | 341 | 2 | 661 |
| Wahabi2017 | 35 | 2354 | 97 | 6951 |

**14.2.4 Preterm delivery**

| Study | Event.GDM | GDM | Event.control | Control |
|---|---|---|---|---|
| Abell2017 | 86 | 958 | 643 | 8327 |
| Alfadhli2015 | 27 | 292 | 37 | 281 |
| Anderberg2010 | 27 | 306 | 9 | 329 |
| Aung2015 | 2 | 92 | 6 | 428 |
| Benhalima2013 | 47 | 160 | 1643 | 6345 |
| Biri2009 | 1 | 73 | 6 | 1432 |
| Bodmer-Roy2012 | 12 | 186 | 22 | 372 |
| Chanprapaph2004 | 3 | 29 | 48 | 547 |
| Cheung2018 | 18 | 375 | 229 | 4873 |
| Chou2010 | 33 | 489 | 708 | 10116 |
| Cosson2006 | 16 | 265 | 59 | 1255 |
| Cosson2013 | 140 | 1770 | 734 | 9205 |
| Davis2018 | 15 | 181 | 455 | 4191 |
| de Lapertosa2021 | 19 | 285 | 60 | 779 |
| de Wit2021 | 26 | 576 | 79 | 2119 |
| Domanski2018 | 27 | 225 | 374 | 4323 |
| Donovan2017 | 407 | 4308 | 9079 | 144191 |
| Duran2014 | 32 | 542 | 55 | 984 |
| Ekeroma2015 | 16 | 238 | 79 | 1672 |
| Feleke2021 | 376 | 862 | 186 | 2597 |
| Feng2017 | 184 | 2927 | 588 | 11814 |
| Gortazar2019 | 5597 | 35729 | 84760 | 704148 |
| Gruendhammer2003 | 21 | 152 | 29 | 304 |
| He2020 | 64 | 1054 | 64 | 1054 |
| Hedderson2003 | 56 | 840 | 1541 | 38515 |
| Hildén2019 | 1405 | 14833 | 70892 | 1440834 |
| Hirst2012 | 37 | 386 | 141 | 2152 |
| Hossein-Nezhad2007 | 9 | 114 | 60 | 1862 |
| Huhn2017 | 8 | 85 | 57 | 635 |
| Jensen2003 | 11 | 289 | 73 | 2596 |
| Kautzky-Willer2008 | 32 | 274 | 1647 | 22317 |
| Keikkala2020 | 41 | 1146 | 23 | 1066 |
| Keshavarz2005 | 4 | 63 | 53 | 1247 |
| Kgosidialwa2015 | 31 | 567 | 85 | 2499 |
| Kim2019 | 11 | 131 | 94 | 1838 |
| Koivunen2020 | 5 | 389 | 22 | 2692 |

| | | | | |
|---|---|---|---|---|
| Kumari2018 | 18 | 170 | 6 | 191 |
| Laafira2016 | 24 | 203 | 267 | 2902 |
| Lai2016 | 2167 | 18542 | 24631 | 311673 |
| Lee2020 | 6 | 52 | 88 | 1979 |
| Leybovitz-Haleluya2018 | 743 | 9460 | 12819 | 206013 |
| Lu2016 | 25 | 251 | 581 | 9002 |
| Macaulay2018 | 16 | 82 | 86 | 643 |
| Mak2019 | 9 | 210 | 23 | 1116 |
| Mayo2015 | 8 | 155 | 209 | 4183 |
| Meek2015 | 29 | 387 | 1492 | 21695 |
| Morikawa2017 | 2316 | 13037 | 29668 | 223108 |
| Muche2020 | 26 | 118 | 40 | 566 |
| Nayak2013 | 8 | 83 | 12 | 221 |
| Nguyen2020 | 26 | 425 | 66 | 1344 |
| Nicolosi2020 | 20 | 207 | 14 | 229 |
| Nielsen2021 | 1413 | 18795 | 34650 | 691618 |
| Ogonowski2015 | 34 | 519 | 51 | 766 |
| Oster2014 | 196 | 1224 | 2465 | 26793 |
| O'Sullivan2011 | 47 | 659 | 223 | 4662 |
| Pan2015 | 21 | 429 | 699 | 16173 |
| Park2015 | 208 | 1781 | 26 | 463 |
| Pavic2021 | 8 | 521 | 18 | 1330 |
| Ramachandran1998 | 11 | 148 | 9 | 831 |
| Redman2021 | 9 | 102 | 63 | 883 |
| Ricart2005 | 7 | 263 | 337 | 6350 |
| Ryan2020 | 1153 | 12942 | 11240 | 208344 |
| Sacks2015 | 174 | 1892 | 491 | 7943 |
| Sagili2015 | 3 | 155 | 18 | 1045 |
| Savona-Ventura2003 | 27 | 236 | 763 | 12260 |
| Seval2016 | 9 | 65 | 132 | 2247 |
| Shah2019 | 705 | 10925 | 3144 | 55748 |
| Shahbazian2016 | 3 | 224 | 0 | 526 |
| Shang2014 | 38 | 612 | 223 | 2471 |
| Shang2014-2 | 8 | 158 | 471 | 5346 |
| Sletner2017 | 7 | 67 | 24 | 466 |
| Soliman2018 | 271 | 3027 | 573 | 8995 |
| Srichumchit2015 | 201 | 1350 | 2853 | 20421 |
| Sugiyama2017 | 27 | 95 | 351 | 1635 |
| Svare2001 | 16 | 324 | 19 | 293 |
| Tomi?2013 | 29 | 341 | 53 | 661 |
| Tong2021 | 460 | 6998 | 1926 | 41446 |
| von Katterfeld2012 | 438 | 4765 | 8695 | 142537 |

| | | | | |
|---|---|---|---|---|
| Wahabi2013 | 48 | 569 | 222 | 2472 |
| Wan2019 | 161 | 1579 | 2993 | 30434 |
| Wang2021 | 127 | 1229 | 673 | 7615 |
| Wei2015 | 139 | 2133 | 380 | 7670 |
| Wells2015 | 34 | 364 | 24 | 1282 |
| Xiong2001 | 287 | 2755 | 8150 | 108664 |
| Yan2017 | 13 | 116 | 155 | 1475 |
| Zhang2018 | 23 | 186 | 11 | 200 |
| Zhao2020 | 8 | 57 | 41 | 528 |

**14.2.5 RDS**

| **Study** | **Event.GDM** | **GDM** | **Event.control** | **Control** |
|---|---|---|---|---|
| Alfadhli2015 | 19 | 292 | 17 | 281 |
| Barakat2010 | 6 | 213 | 0 | 245 |
| Bashir2021 | 32 | 402 | 53 | 1331 |
| Cosson2006 | 3 | 265 | 14 | 1255 |
| Cosson2013 | 84 | 1770 | 363 | 9205 |
| Domanski2018 | 15 | 224 | 213 | 4310 |
| Gasim2012 | 3 | 220 | 2 | 220 |
| Hossein-Nezhad2007 | 2 | 114 | 7 | 1862 |
| Jensen2003 | 24 | 289 | 192 | 2596 |
| Johns2006 | 5 | 394 | 0 | 100 |
| Kumari2018 | 8 | 170 | 3 | 191 |
| Luengmettakul2015 | 4 | 343 | 7 | 345 |
| Mallah1997 | 2 | 972 | 36 | 8904 |
| Nayak2013 | 3 | 83 | 6 | 221 |
| Nguyen2016 | 47 | 1731 | 47 | 1860 |
| Nicolosi2020 | 15 | 207 | 13 | 229 |
| O'Sullivan2011 | 24 | 659 | 86 | 4662 |
| Sacks2015 | 42 | 1892 | 125 | 7943 |
| Savona-Ventura2003 | 8 | 236 | 269 | 12260 |
| Shahbazian2016 | 5 | 224 | 6 | 526 |
| Shindo2020 | 6 | 503 | 28 | 2789 |
| Soliman2018 | 175 | 3027 | 431 | 8995 |
| Svare2001 | 26 | 302 | 17 | 287 |
| Wan2019 | 73 | 1579 | 953 | 30434 |

**14.2.6 Low 1-min Apgar score**

| **Study** | **Event.GDM** | **GDM** | **Event.control** | **Control** |
|---|---|---|---|---|
| Barakat2010 | 47 | 213 | 25 | 245 |
| Chou2010 | 29 | 489 | 634 | 10116 |

| | | | | |
|---|---|---|---|---|
| Duran2014 | 19 | 542 | 34 | 984 |
| Ethridge2014 | 24 | 281 | 553 | 6999 |
| Lee2020 | 2 | 52 | 52 | 1979 |
| Leybovitz-Haleluya2018 | 424 | 9460 | 6816 | 206013 |
| Lu2016 | 4 | 251 | 99 | 9002 |
| Makwana2017 | 7 | 38 | 14 | 438 |
| Meek2015 | 34 | 387 | 1297 | 21695 |
| Muche2020 | 21 | 118 | 39 | 566 |
| Pan2015 | 0 | 429 | 31 | 16173 |
| Ricart2005 | 12 | 263 | 254 | 6350 |
| Tong2021 | 31 | 6998 | 193 | 41446 |

**14.2.7 Low 5-min Apgar score**

| Study | Event.GDM | GDM | Event.control | Control |
|---|---|---|---|---|
| Alfadhli2015 | 23 | 292 | 3 | 281 |
| Anderberg2010 | 8 | 306 | 1 | 329 |
| Benhalima2013 | 6 | 160 | 108 | 6345 |
| Chanprapaph2004 | 1 | 29 | 5 | 547 |
| de Wit2021 | 20 | 576 | 39 | 2119 |
| Donovan2017 | 122 | 4416 | 3302 | 146466 |
| Duran2014 | 1 | 542 | 5 | 984 |
| Ethridge2014 | 1 | 281 | 98 | 6999 |
| Gasim2012 | 7 | 220 | 5 | 220 |
| Gruendhammer2003 | 1 | 152 | 1 | 304 |
| Kautzky-Willer2008 | 4 | 274 | 504 | 22317 |
| Keikkala2020 | 26 | 999 | 20 | 937 |
| Lai2016 | 385 | 18872 | 5876 | 314717 |
| Lee2020 | 0 | 52 | 9 | 1979 |
| Leybovitz-Haleluya2018 | 35 | 9460 | 629 | 206013 |
| Lu2016 | 0 | 251 | 28 | 9002 |
| Mallah1997 | 5 | 972 | 107 | 8904 |
| Meek2015 | 4 | 387 | 186 | 21695 |
| Miailhe2015 | 3 | 256 | 29 | 1878 |
| Minsart2014 | 13 | 106 | 13 | 268 |
| Muche2020 | 18 | 118 | 22 | 566 |
| Nasrat1996 | 1 | 173 | 7 | 337 |
| Nicolosi2020 | 7 | 207 | 9 | 229 |
| O'Sullivan2011 | 2 | 659 | 13 | 4662 |
| Ovesen2015 | 74 | 9014 | 2338 | 389609 |
| Ricart2005 | 2 | 263 | 83 | 6350 |
| Savona-Ventura2003 | 7 | 236 | 141 | 12260 |

| | | | | |
|---|---|---|---|---|
| Shindo2020 | 39 | 503 | 195 | 2789 |
| Shub2019 | 4 | 171 | 14 | 547 |
| Srichumchit2015 | 35 | 1350 | 633 | 20421 |
| Svare2001 | 10 | 321 | 3 | 288 |
| Wahabi2013 | 6 | 569 | 42 | 2472 |
| Wan2019 | 57 | 1579 | 1320 | 30434 |
| Weijers2002 | 4 | 71 | 7 | 490 |

**14.2.8 Macrosomia**

| Study | Event.GDM | GDM | Event.control | Control |
|---|---|---|---|---|
| Alberico2014 | 51 | 360 | 1015 | 13713 |
| Alfadhli2015 | 9 | 292 | 6 | 281 |
| Ardawi2000 | 19 | 102 | 33 | 529 |
| Aung2015 | 19 | 92 | 58 | 428 |
| Davis2018 | 32 | 181 | 455 | 4191 |
| de Lapertosa2021 | 29 | 285 | 46 | 779 |
| de Wit2021 | 117 | 576 | 325 | 2119 |
| Djelmis2016 | 98 | 409 | 494 | 3391 |
| Donovan2017 | 594 | 4416 | 13924 | 146466 |
| Duran2014 | 26 | 542 | 30 | 984 |
| Ekeroma2015 | 63 | 238 | 347 | 1672 |
| Erjavec2016 | 314 | 1829 | 4245 | 37263 |
| Ethridge2014 | 27 | 281 | 315 | 6999 |
| Feng2017 | 283 | 2927 | 861 | 11814 |
| Forsbach1997 | 2 | 20 | 29 | 560 |
| Gasim2012 | 28 | 220 | 11 | 220 |
| Gorgal2012 | 13 | 220 | 32 | 660 |
| Gortazar2019 | 3801 | 35729 | 41607 | 704148 |
| Gruendhammer2003 | 19 | 152 | 28 | 304 |
| Gu2019 | 250 | 1263 | 78 | 704 |
| He2020 | 10 | 1054 | 3 | 1054 |
| Hedderson2003 | 197 | 840 | 5354 | 38515 |
| Hillier2008 | 85 | 544 | 3556 | 27584 |
| Hossein-Nezhad2007 | 29 | 114 | 64 | 1862 |
| Huhn2017 | 15 | 85 | 72 | 635 |
| Ikenoue2014 | 1 | 141 | 9 | 852 |
| Jensen2003 | 98 | 289 | 696 | 2596 |
| Jin2020 | 872 | 8324 | 2848 | 35855 |
| Johns2006 | 52 | 394 | 5 | 100 |
| Kalra2013 | 6 | 33 | 18 | 467 |
| Keshavarz2005 | 5 | 63 | 35 | 1247 |
| Kgosidialwa2015 | 77 | 567 | 515 | 2499 |
| Kim2019 | 11 | 131 | 63 | 1838 |

| | | | | |
|---|---|---|---|---|
| Kim2021 | 17 | 378 | 128 | 6721 |
| K?süs2013 | 11 | 70 | 20 | 740 |
| Laafira2016 | 36 | 203 | 307 | 2902 |
| Langer2005 | 93 | 555 | 87 | 1110 |
| Lapolla2011 | 12 | 112 | 145 | 1815 |
| Lee2018 | 14 | 247 | 29 | 840 |
| Lee2020 | 5 | 52 | 64 | 1979 |
| Leybovitz-Haleluya2018 | 946 | 9460 | 9132 | 206013 |
| Li2014 | 842 | 8517 | 3214 | 45758 |
| Lin2009 | 43 | 617 | 24 | 1250 |
| Liu2020-2 | 1 | 50 | 9 | 360 |
| Lu2016 | 7 | 251 | 75 | 9002 |
| Luengmettakul2015 | 14 | 343 | 5 | 345 |
| Macaulay2018 | 1 | 82 | 16 | 643 |
| Mak2019 | 13 | 210 | 34 | 1116 |
| Mallah1997 | 132 | 972 | 454 | 8904 |
| Mayo2015 | 19 | 155 | 391 | 4183 |
| Meek2015 | 112 | 387 | 2427 | 21695 |
| Miyakoshi2004 | 2 | 49 | 14 | 2463 |
| Muche2020 | 25 | 118 | 24 | 566 |
| Mwanri2014 | 3 | 54 | 71 | 856 |
| Nasrat1996 | 24 | 173 | 14 | 337 |
| Nguyen2016 | 171 | 1731 | 162 | 1860 |
| Nguyen2020 | 9 | 425 | 13 | 1344 |
| Nicolosi2020 | 17 | 207 | 13 | 229 |
| Ogonowski2008 | 38 | 524 | 109 | 1011 |
| Ogonowski2015 | 40 | 519 | 64 | 766 |
| Oster2014 | 367 | 1224 | 4474 | 26793 |
| O'Sullivan2011 | 33 | 659 | 156 | 4662 |
| Ozumba2004 | 35 | 200 | 11 | 200 |
| Pan2015 | 73 | 429 | 1351 | 16173 |
| Pavic2021 | 121 | 521 | 209 | 1330 |
| Redman2021 | 12 | 102 | 71 | 883 |
| Ricart2005 | 21 | 263 | 292 | 6350 |
| Saldana2003 | 16 | 102 | 217 | 1900 |
| Savona-Ventura2003 | 29 | 236 | 738 | 12260 |
| Schwartz1999 | 22 | 91 | 692 | 4190 |
| Segregur2009 | 84 | 351 | 185 | 1502 |
| Seval2016 | 8 | 65 | 126 | 2247 |
| Shahbazian2016 | 8 | 224 | 13 | 526 |
| Shang2014 | 80 | 612 | 194 | 2471 |
| Shang2014-2 | 20 | 158 | 405 | 5346 |

| | | | | |
|---|---|---|---|---|
| Shindo2020 | 7 | 503 | 39 | 2789 |
| Sirimarco2017 | 13 | 194 | 5 | 199 |
| Soliman2018 | 205 | 3027 | 447 | 8995 |
| Soonthornpun2009 | 3 | 51 | 16 | 677 |
| Srichumchit2015 | 270 | 1350 | 2776 | 20421 |
| Sugiyama2017 | 11 | 95 | 67 | 1635 |
| Sun1995 | 19 | 44 | 40 | 578 |
| Tan2017 | 16 | 197 | 123 | 4512 |
| Tong2021 | 376 | 6998 | 1896 | 41446 |
| van Hoorn2002 | 4 | 51 | 18 | 258 |
| Wahabi2013 | 30 | 569 | 76 | 2472 |
| Wahabi2017 | 103 | 2354 | 156 | 6951 |
| Wan2019 | 192 | 1579 | 3700 | 30434 |
| Wang2021 | 115 | 1229 | 464 | 7615 |
| Wei2014 | 170 | 1151 | 1428 | 21286 |
| Yan2017 | 19 | 116 | 52 | 1475 |
| Zhang2018 | 18 | 186 | 8 | 200 |
| Zhao2020 | 6 | 57 | 50 | 528 |

**14.2.9 LGA**

| **Study** | **Event.GDM** | **GDM** | **Event.control** | **Control** |
|---|---|---|---|---|
| Abell2017 | 137 | 958 | 562 | 8327 |
| Bashir2021 | 55 | 402 | 88 | 1331 |
| Benhalima2013 | 17 | 160 | 571 | 6345 |
| Catalano2012 | 604 | 3726 | 1617 | 19491 |
| Chanprapaph2004 | 1 | 29 | 51 | 547 |
| Cheung2018 | 58 | 375 | 369 | 4873 |
| Chico2005 | 39 | 422 | 92 | 5767 |
| Cosson2006 | 20 | 265 | 105 | 1255 |
| Cosson2013 | 263 | 1770 | 754 | 9205 |
| Davis2018 | 34 | 181 | 530 | 4191 |
| de Wit2021 | 84 | 576 | 203 | 2119 |
| Djelmis2016 | 177 | 409 | 583 | 3391 |
| Domanski2018 | 45 | 225 | 457 | 4323 |
| Donovan2017 | 628 | 4416 | 12045 | 146466 |
| Duran2014 | 26 | 542 | 31 | 984 |
| Ethridge2014 | 56 | 281 | 581 | 6999 |
| Feng2017 | 273 | 2927 | 694 | 11814 |
| Gasim2012 | 32 | 220 | 11 | 220 |
| Gortazar2019 | 6549 | 35729 | 89517 | 704148 |
| Gruendhammer2003 | 31 | 152 | 45 | 304 |
| Hedderson2003 | 163 | 840 | 3543 | 38515 |
| Hirst2012 | 62 | 386 | 253 | 2152 |

| | | | | |
|---|---|---|---|---|
| Huhn2017 | 8 | 85 | 28 | 635 |
| Ikenoue2014 | 10 | 141 | 59 | 852 |
| Jain2016 | 684 | 7641 | 67 | 8000 |
| Jensen2003 | 83 | 289 | 515 | 2596 |
| Johns2006 | 61 | 394 | 5 | 100 |
| Keikkala2020 | 64 | 1146 | 28 | 1066 |
| Kgosidialwa2015 | 71 | 567 | 392 | 2499 |
| Kieffer1999 | 4 | 19 | 46 | 353 |
| Kim2019 | 28 | 131 | 178 | 1838 |
| Kim2021 | 48 | 378 | 343 | 6721 |
| Kirke2014 | 13 | 73 | 195 | 1563 |
| Koivunen2020 | 53 | 389 | 250 | 2692 |
| Lai2016 | 2879 | 18872 | 28608 | 314717 |
| Langer2005 | 163 | 555 | 125 | 1110 |
| Lapolla2011 | 20 | 112 | 272 | 1815 |
| Lee2018 | 16 | 247 | 28 | 840 |
| Lee2020 | 14 | 52 | 182 | 1979 |
| Li2020 | 18 | 107 | 161 | 2020 |
| Liu2020 | 13 | 66 | 18 | 286 |
| Liu2020-2 | 1 | 50 | 14 | 360 |
| Luengmettakul2015 | 122 | 343 | 84 | 345 |
| Macaulay2018 | 5 | 82 | 40 | 643 |
| Mak2019 | 20 | 210 | 97 | 1116 |
| Mayo2015 | 21 | 155 | 337 | 4183 |
| McIntyre2018 | 64 | 620 | 57 | 896 |
| Meek2015 | 115 | 387 | 2264 | 21695 |
| Miailhe2015 | 43 | 256 | 156 | 1878 |
| Minsart2014 | 15 | 106 | 25 | 268 |
| Miyakoshi2004 | 8 | 49 | 133 | 2463 |
| Muche2020 | 31 | 118 | 46 | 566 |
| Nayak2013 | 1 | 83 | 8 | 221 |
| Nguyen2016 | 164 | 1731 | 123 | 1860 |
| Nguyen2020 | 30 | 425 | 70 | 1344 |
| Nicolosi2020 | 20 | 207 | 14 | 229 |
| Nielsen2021 | 3962 | 18795 | 65931 | 691618 |
| Ogonowski2008 | 49 | 524 | 131 | 1011 |
| Ogonowski2015 | 64 | 519 | 89 | 766 |
| O'Sullivan2011 | 149 | 659 | 751 | 4662 |
| Pan2015 | 86 | 429 | 1493 | 16173 |
| Park2015 | 138 | 1781 | 26 | 463 |
| Pavic2021 | 131 | 521 | 232 | 1330 |
| Redman2021 | 18 | 102 | 76 | 883 |
| Ricart2005 | 54 | 263 | 845 | 6350 |

| | | | | |
|---|---|---|---|---|
| Ryan2020 | 1726 | 12942 | 16848 | 208344 |
| Sacks2015 | 346 | 1892 | 785 | 7943 |
| Saldana2003 | 19 | 102 | 211 | 1900 |
| Shah2019 | 1801 | 10925 | 6702 | 55748 |
| Shand2008 | 2644 | 16672 | 36377 | 348945 |
| Shi2020 | 441 | 1786 | 1414 | 8626 |
| Shindo2020 | 52 | 503 | 243 | 2789 |
| Shub2019 | 31 | 171 | 139 | 547 |
| Sirimarco2017 | 14 | 194 | 9 | 199 |
| Sletner2017 | 8 | 67 | 33 | 466 |
| Tomi?2013 | 129 | 341 | 142 | 661 |
| Tong2021 | 777 | 6998 | 3456 | 41446 |
| von Katterfeld2012 | 696 | 4765 | 14681 | 142537 |
| Wahlberg2016 | 240 | 1805 | 121 | 3565 |
| Wan2019 | 261 | 1579 | 3090 | 30434 |
| Wang2021 | 172 | 1229 | 736 | 7615 |
| Wei2015 | 395 | 2133 | 1011 | 7670 |
| Wells2015 | 29 | 364 | 139 | 1282 |
| Xiong2001 | 284 | 2755 | 3369 | 108664 |

**14.2.10 LBW**

| **Study** | **Event.GDM** | **GDM** | **Event.control** | **Control** |
|---|---|---|---|---|
| Alfadhli2015 | 38 | 292 | 45 | 281 |
| Ardawi2000 | 2 | 102 | 14 | 529 |
| Barakat2010 | 18 | 213 | 16 | 245 |
| Berggren2011 | 37 | 460 | 316 | 3117 |
| Chia1996 | 36 | 411 | 340 | 3391 |
| Duran2014 | 36 | 542 | 63 | 984 |
| Erjavec2016 | 98 | 1829 | 2024 | 37263 |
| Gasim2012 | 8 | 220 | 7 | 220 |
| Jain2016 | 863 | 7641 | 758 | 8000 |
| Jin2020 | 247 | 8324 | 869 | 35855 |
| Johns2006 | 15 | 394 | 3 | 100 |
| Kautzky-Willer2008 | 29 | 274 | 2196 | 22317 |
| Keshavarz2005 | 4 | 63 | 78 | 1247 |
| Leybovitz-Haleluya2018 | 491 | 9460 | 12848 | 206013 |
| Lu2016 | 20 | 251 | 507 | 9002 |
| Luengmettakul2015 | 24 | 343 | 23 | 345 |
| Macaulay2018 | 16 | 82 | 97 | 643 |
| Mak2019 | 4 | 210 | 11 | 1116 |
| Mallah1997 | 24 | 972 | 338 | 8904 |
| Muche2020 | 11 | 118 | 42 | 566 |

| | | | | |
|---|---|---|---|---|
| Mwanri2014 | 1 | 54 | 36 | 856 |
| Nguyen2016 | 80 | 1731 | 87 | 1860 |
| Nguyen2020 | 20 | 425 | 53 | 1344 |
| Oster2014 | 83 | 1224 | 2143 | 26793 |
| Pan2015 | 6 | 429 | 386 | 16173 |
| Savona-Ventura2003 | 19 | 236 | 771 | 12260 |
| Seval2016 | 6 | 65 | 78 | 2247 |
| Shahbazian2016 | 5 | 224 | 13 | 526 |
| Shang2014 | 23 | 612 | 174 | 2471 |
| Shang2014-2 | 6 | 158 | 350 | 5346 |
| Soliman2018 | 192 | 3027 | 594 | 8995 |
| Soonthornpun2009 | 4 | 51 | 26 | 677 |
| Sugiyama2017 | 11 | 95 | 151 | 1635 |
| Tong2021 | 311 | 6998 | 1390 | 41446 |
| Wahabi2017 | 118 | 2354 | 374 | 6951 |
| Wang2021 | 66 | 1229 | 388 | 7615 |
| Xiong2001 | 127 | 2755 | 6085 | 108664 |
| Zhao2020 | 2 | 57 | 14 | 528 |

**14.2.11 SGA**

| Study | Event.GDM | GDM | Event.control | Control |
|---|---|---|---|---|
| Abell2017 | 91 | 958 | 1261 | 8327 |
| Bashir2021 | 43 | 402 | 190 | 1331 |
| Chanprapaph2004 | 4 | 29 | 55 | 547 |
| Cheung2018 | 38 | 375 | 615 | 4873 |
| Chico2005 | 30 | 422 | 484 | 5767 |
| Cosson2006 | 21 | 265 | 149 | 1255 |
| Davis2018 | 13 | 181 | 436 | 4191 |
| de Lapertosa2021 | 11 | 285 | 42 | 779 |
| de Wit2021 | 28 | 576 | 160 | 2119 |
| Domanski2018 | 11 | 225 | 409 | 4323 |
| Donovan2017 | 368 | 4416 | 14248 | 146466 |
| Duran2014 | 39 | 542 | 70 | 984 |
| Feng2017 | 115 | 2927 | 611 | 11814 |
| Gasim2012 | 16 | 220 | 15 | 220 |
| Gortazar2019 | 2882 | 35729 | 62038 | 704148 |
| Gruendhammer2003 | 11 | 152 | 21 | 304 |
| He2020 | 8 | 1054 | 10 | 1054 |
| Hedderson2003 | 68 | 840 | 4006 | 38515 |
| Hirst2012 | 27 | 386 | 173 | 2152 |
| Ikenoue2014 | 7 | 141 | 53 | 852 |
| Johns2006 | 32 | 394 | 8 | 100 |
| Keikkala2020 | 21 | 1146 | 34 | 1066 |

| | | | | |
|---|---|---|---|---|
| Kgosidialwa2015 | 23 | 567 | 129 | 2499 |
| Kieffer1999 | 1 | 19 | 14 | 353 |
| Kim2019 | 10 | 131 | 187 | 1838 |
| Lai2016 | 1769 | 18872 | 32468 | 314717 |
| Lapolla2011 | 3 | 112 | 58 | 1815 |
| Lee2018 | 26 | 247 | 114 | 840 |
| Lee2020 | 1 | 52 | 209 | 1979 |
| Li2020 | 0 | 107 | 187 | 2020 |
| Macaulay2018 | 12 | 82 | 113 | 643 |
| Mak2019 | 19 | 210 | 48 | 1116 |
| Meek2015 | 24 | 387 | 2619 | 21695 |
| Miailhe2015 | 16 | 256 | 211 | 1878 |
| Miyakoshi2004 | 5 | 49 | 157 | 2463 |
| Muche2020 | 7 | 118 | 41 | 566 |
| Nayak2013 | 14 | 83 | 37 | 221 |
| Nguyen2016 | 59 | 1731 | 141 | 1860 |
| Nguyen2020 | 41 | 425 | 108 | 1344 |
| Nicolosi2020 | 12 | 207 | 33 | 229 |
| Nielsen2021 | 1533 | 18795 | 72057 | 691618 |
| Ogonowski2008 | 31 | 524 | 67 | 1011 |
| Ogonowski2015 | 28 | 519 | 49 | 766 |
| O'Sullivan2011 | 38 | 659 | 203 | 4662 |
| Park2015 | 98 | 1781 | 28 | 463 |
| Pavic2021 | 7 | 521 | 39 | 1330 |
| Redman2021 | 13 | 102 | 68 | 883 |
| Ricart2005 | 17 | 263 | 445 | 6350 |
| Shand2008 | 1411 | 16672 | 34238 | 348945 |
| Shi2020 | 71 | 1786 | 379 | 8626 |
| Shindo2020 | 40 | 503 | 266 | 2789 |
| Sletner2017 | 7 | 67 | 67 | 466 |
| Wahlberg2016 | 25 | 1805 | 96 | 3565 |
| Wan2019 | 91 | 1579 | 2394 | 30434 |
| Wang2021 | 61 | 1229 | 487 | 7615 |
| Wells2015 | 36 | 364 | 103 | 1282 |
| Xiong2001 | 91 | 2755 | 3803 | 108664 |
| Zhao2020 | 1 | 57 | 5 | 528 |

**14.2.12 Neonatal hypoglycemia**

| Study | Event.GDM | GDM | Event.control | Control |
|---|---|---|---|---|
| Alfadhli2015 | 40 | 292 | 4 | 281 |
| de Lapertosa2021 | 9 | 285 | 8 | 779 |
| Domanski2018 | 47 | 224 | 86 | 4310 |
| Gasim2012 | 6 | 220 | 2 | 220 |

| | | | | |
|---|---|---|---|---|
| Huhn2017 | 21 | 85 | 38 | 635 |
| Langer2005 | 100 | 555 | 21 | 1110 |
| Luengmettakul2015 | 23 | 343 | 2 | 345 |
| Mallah1997 | 42 | 972 | 3 | 8904 |
| Shindo2020 | 7 | 503 | 21 | 2789 |
| Tomi?2013 | 9 | 341 | 12 | 661 |
| Wei2015 | 37 | 2133 | 45 | 7670 |

**14.2.13 Neonatal jaundice**

| Study | Event.GDM | GDM | Event.control | Control |
|---|---|---|---|---|
| Abell2017 | 82 | 958 | 571 | 8327 |
| Bodmer-Roy2012 | 14 | 186 | 26 | 372 |
| Chico2005 | 17 | 422 | 144 | 5767 |
| Cosson2006 | 8 | 265 | 32 | 1255 |
| Gasim2012 | 18 | 220 | 10 | 220 |
| Gruendhammer2003 | 8 | 152 | 12 | 304 |
| Hirst2012 | 16 | 386 | 65 | 2152 |
| Jain2016 | 382 | 7641 | 84 | 8000 |
| Jensen2003 | 6 | 289 | 83 | 2596 |
| Johns2006 | 28 | 394 | 4 | 100 |
| Kautzky-Willer2008 | 41 | 274 | 1395 | 22317 |
| Kim2019 | 51 | 131 | 515 | 1838 |
| Kirke2014 | 8 | 73 | 84 | 1563 |
| Lee2020 | 16 | 52 | 545 | 1979 |
| Mayo2015 | 12 | 155 | 267 | 4183 |
| Nayak2013 | 3 | 83 | 1 | 221 |
| Nguyen2020 | 47 | 425 | 120 | 1344 |
| Nicolosi2020 | 54 | 207 | 52 | 229 |
| O'Sullivan2011 | 39 | 659 | 316 | 4662 |
| Shahbazian2016 | 12 | 224 | 34 | 526 |
| Shindo2020 | 37 | 503 | 144 | 2789 |
| Soonthornpun2009 | 5 | 51 | 58 | 677 |
| Tomi?2013 | 33 | 341 | 28 | 661 |
| Wan2019 | 120 | 1579 | 2006 | 30434 |
| Yan2017 | 6 | 116 | 41 | 1475 |

**14.2.14 NICU admission**

| Study | Event.GDM | GDM | Event.control | Control |
|---|---|---|---|---|
| Alfadhli2015 | 76 | 292 | 52 | 281 |
| Anderberg2010 | 57 | 306 | 14 | 329 |
| Aung2015 | 8 | 92 | 22 | 428 |
| Bashir2021 | 58 | 402 | 110 | 1331 |
| Benhalima2013 | 19 | 160 | 692 | 6345 |

| | | | | |
|---|---|---|---|---|
| Berggren2011 | 138 | 460 | 804 | 3117 |
| Cosson2006 | 3 | 265 | 8 | 1255 |
| de Wit2021 | 22 | 576 | 75 | 2119 |
| Domanski2018 | 104 | 224 | 805 | 4310 |
| Duran2014 | 52 | 542 | 42 | 984 |
| Ekeroma2015 | 15 | 238 | 102 | 1672 |
| Ethridge2014 | 24 | 281 | 476 | 6999 |
| Gasim2012 | 36 | 220 | 12 | 220 |
| He2020 | 208 | 1054 | 506 | 1054 |
| Hirst2012 | 17 | 386 | 86 | 2152 |
| Kalra2013 | 9 | 33 | 56 | 467 |
| Kautzky-Willer2008 | 69 | 274 | 1663 | 22317 |
| Kgosidialwa2015 | 88 | 567 | 189 | 2499 |
| Kim2019 | 9 | 131 | 181 | 1838 |
| Kirke2014 | 1 | 73 | 13 | 1563 |
| Lai2016 | 3361 | 18872 | 37702 | 314717 |
| Lee2020 | 5 | 52 | 226 | 1979 |
| Li2020 | 19 | 107 | 204 | 2020 |
| Liu2020-2 | 1 | 50 | 11 | 360 |
| Lu2016 | 26 | 251 | 584 | 9002 |
| Mak2019 | 30 | 210 | 101 | 1116 |
| Mayo2015 | 11 | 155 | 173 | 4183 |
| Meek2015 | 22 | 387 | 1488 | 21695 |
| Muche2020 | 39 | 118 | 102 | 566 |
| Nayak2013 | 9 | 83 | 9 | 221 |
| Nguyen2016 | 113 | 1731 | 52 | 1860 |
| Nguyen2020 | 15 | 425 | 37 | 1344 |
| Nicolosi2020 | 6 | 207 | 7 | 229 |
| Oster2014 | 197 | 1224 | 2304 | 26793 |
| O'Sullivan2011 | 170 | 659 | 419 | 4662 |
| Redman2021 | 18 | 102 | 99 | 883 |
| Seval2016 | 3 | 65 | 83 | 2247 |
| Shah2019 | 1334 | 10925 | 6064 | 55748 |
| Shahbazian2016 | 4 | 224 | 1 | 526 |
| Shand2008 | 404 | 16672 | 6030 | 348945 |
| Shindo2020 | 25 | 503 | 109 | 2789 |
| Shub2019 | 29 | 171 | 70 | 547 |
| Soliman2018 | 483 | 3027 | 1076 | 8995 |
| Svare2001 | 57 | 314 | 26 | 290 |
| Tomi?2013 | 28 | 341 | 23 | 661 |
| Tong2021 | 921 | 6998 | 4163 | 41446 |
| Wahabi2017 | 110 | 2354 | 281 | 6951 |

| | | | | |
|---|---|---|---|---|
| Wan2019 | 393 | 1579 | 5026 | 30434 |

Note:

Event.GDM means the number of defined adverse pregnancy outcome present in the GDM group;

GDM means the total number of pregnancies in the GDM group;

Event.control means the number of defined adverse pregnancy outcome present in the control group;

Control means the total number of pregnancies in the control group.

**Supplemental Table S15. The R language codes mainly used in the meta-analysis of our study**

```
# Install and run the {meta} package
install.packages("meta")
library(meta)

# Load the data
data <- read.csv("#pathway/data.csv")

# Meta-analysis
For unadjusted associations based binary data:
metaresult <- metabin(Event.GDM, GDM, Event.control, Control, data=data, sm="RR", label.e="GDM", label.c="Control", incr="TACC", hakn=TRUE, studlab = Study)
For adjusted associations based ORs and 95% CIs:
data$lgor <- log(data $OR)
lglci <- log(data $lci_OR)
lguci <- log(data $uci_OR)
data $selgor <- (lguci-lglci)/(2*1.96)
metaresult <- metagen(TE=lgor, seTE=selgor, data= data, sm="OR", incr="TACC", hakn=TRUE, studlab = Study)

# Forest plot
forest(metaresult, digits.I2 = 1, digits.pval.Q=4)

# Funnel plot
funnel(metaresult)

# Egger's test
metabias(metaresult, method.bias="Eggers")

# Sensitivity analysis
metainf(metaresult, pooled="random", sortvar = Study)

# Meta-regression
regression <- metareg(metaresult, ~Insulin)

# Subgroup analysis
metaresult_sub <- metagen(TE=lgor, seTE=selgor, data= data, sm="OR", subgroup=#subgroup, studlab = Study, incr="TACC", hakn=TRUE)
```

**Supplemental Table S16. PRISMA Checklist.**

| Section and Topic | Item # | Checklist item | Reported on page # |
|---|---|---|---|
| **TITLE** | | | |
| Title | 1 | Identify the report as a systematic review. | 1 |
| **ABSTRACT** | | | |
| Abstract | 2 | See the PRISMA 2020 for Abstracts checklist. | 2 |
| **INTRODUCTION** | | | |
| Rationale | 3 | Describe the rationale for the review in the context of existing knowledge. | 3 |
| Objectives | 4 | Provide an explicit statement of the objective(s) or question(s) the review addresses. | 4 |
| **METHODS** | | | |
| Eligibility criteria | 5 | Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses. | 5 |
| Information sources | 6 | Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted. | Page 4 |
| Search strategy | 7 | Present the full search strategies for all databases, registers, and websites, including any filters and limits used. | 4-5, Supplemental Table S1 |
| Selection process | 8 | Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process. | 4-5 |
| Data collection process | 9 | Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process. | 4-5 |
| Data items | 10a | List and define all outcomes for which data were sought. Specify whether all results that were compatible with | 5, Supplemental Table S3 |

| Section and Topic | Item # | Checklist item | Reported on page # |
|---|---|---|---|
| | | each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect. | |
| | 10b | List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information. | 5-6, Supplemental Table S12 |
| Study risk of bias assessment | 11 | Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process. | 6, Supplemental Table S4 |
| Effect measures | 12 | Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results. | 6 |
| Synthesis methods | 13a | Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)). | 6 |
| | 13b | Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions. | 6, Supplemental Table S15 |
| | 13c | Describe any methods used to tabulate or visually display results of individual studies and syntheses. | 6, Supplemental Table S15 |
| | 13d | Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used. | 6 |
| | 13e | Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression). | 6 |
| | 13f | Describe any sensitivity analyses conducted to assess robustness of the synthesized results. | 6 |
| Reporting bias | 14 | Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting | 6 |

| Section and Topic | Item # | Checklist item | Reported on page # |
|---|---|---|---|
| assessment | | biases). | |
| Certainty assessment | 15 | Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome. | 6 |
| **RESULTS** | | | |
| Study selection | 16a | Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram. | 7, Figure 1 |
| | 16b | Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded. | 7, Supplemental Table S5 |
| Study characteristics | 17 | Cite each included study and present its characteristics. | 7, Supplemental Table S12 |
| Risk of bias in studies | 18 | Present assessments of risk of bias for each included study. | Supplemental Table S13-14 |
| Results of individual studies | 19 | For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots. | Figure 2, Supplemental Figure 1-4 |
| Results of syntheses | 20a | For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies. | 7, Supplemental Table S12 |
| | 20b | Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g., confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect. | 7-8 |
| | 20c | Present results of all investigations of possible causes of heterogeneity among study results. | 8, Table 2, Supplemental Table S7-8 |
| | 20d | Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results. | 8, Supplemental Figure 5 |

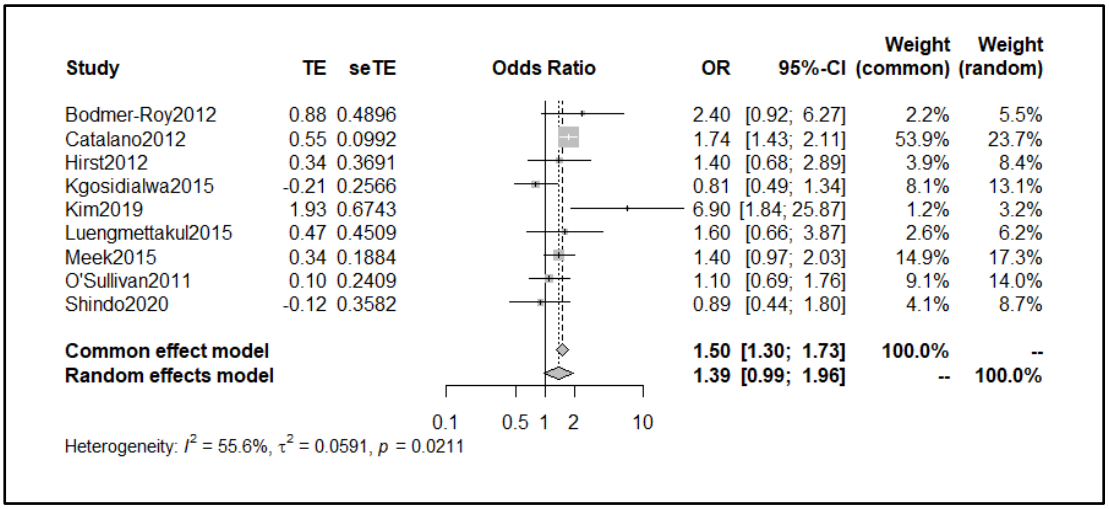
| Section and Topic | Item # | Checklist item | Reported on page # |
|---|---|---|---|
| Reporting biases | 21 | Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed. | 9, Supplemental Table S10, Supplemental Figure S6 |
| Certainty of evidence | 22 | Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed. | Figure 2, Supplemental Figure 1-4 |
| **DISCUSSION** | | | |
| Discussion | 23a | Provide a general interpretation of the results in the context of other evidence. | 9-10 |
| | 23b | Discuss any limitations of the evidence included in the review. | 10-11 |
| | 23c | Discuss any limitations of the review processes used. | 10-11 |
| | 23d | Discuss implications of the results for practice, policy, and future research. | 11 |
| **OTHER INFORMATION** | | | |
| Registration and protocol | 24a | Provide registration information for the review, including register name and registration number, or state that the review was not registered. | 2, 4 |
| | 24b | Indicate where the review protocol can be accessed, or state that a protocol was not prepared. | 2, 4 |
| | 24c | Describe and explain any amendments to information provided at registration or in the protocol. | Not applicable |
| Support | 25 | Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review. | 6, 11-12 |
| Competing interests | 26 | Declare any competing interests of review authors. | 12 |
| Availability of | 27 | Report which of the following are publicly available and where they can be found: template data collection forms; | 12, Supplemental Table |

| Section and Topic | Item # | Checklist item | Reported on page # |
|---|---|---|---|
| data, code and other materials | | data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review. | S13-15 |

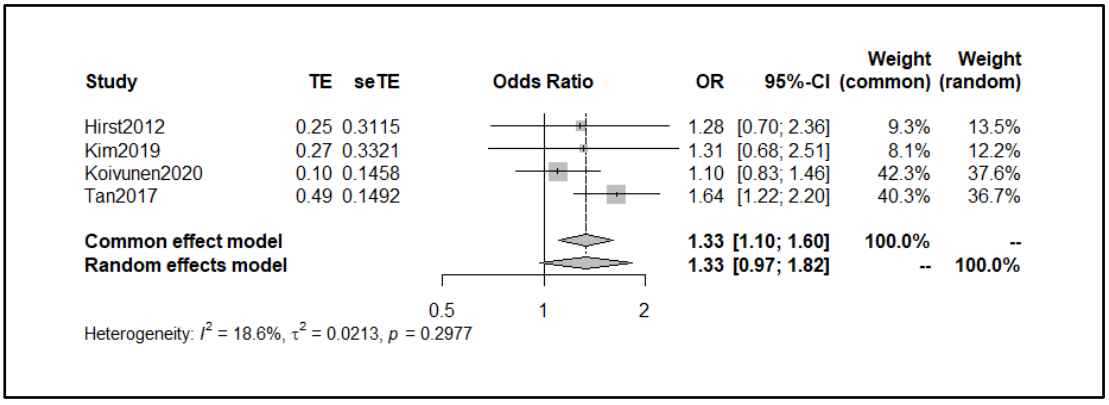
**Supplemental Figure S1. Meta-analysis of adverse pregnancy outcomes with and without adjustment for confounders in subset A (no insulin use)**

**1.1 Maternal outcomes**

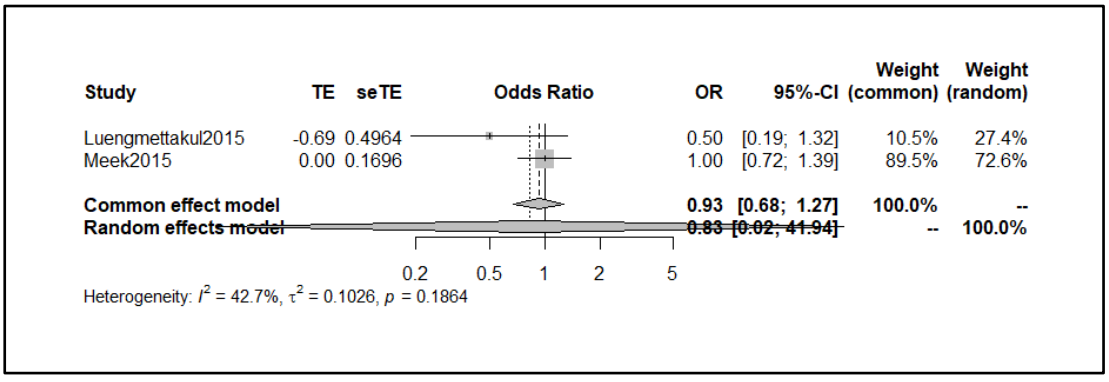
**1.1.1 Pre-eclampsia**



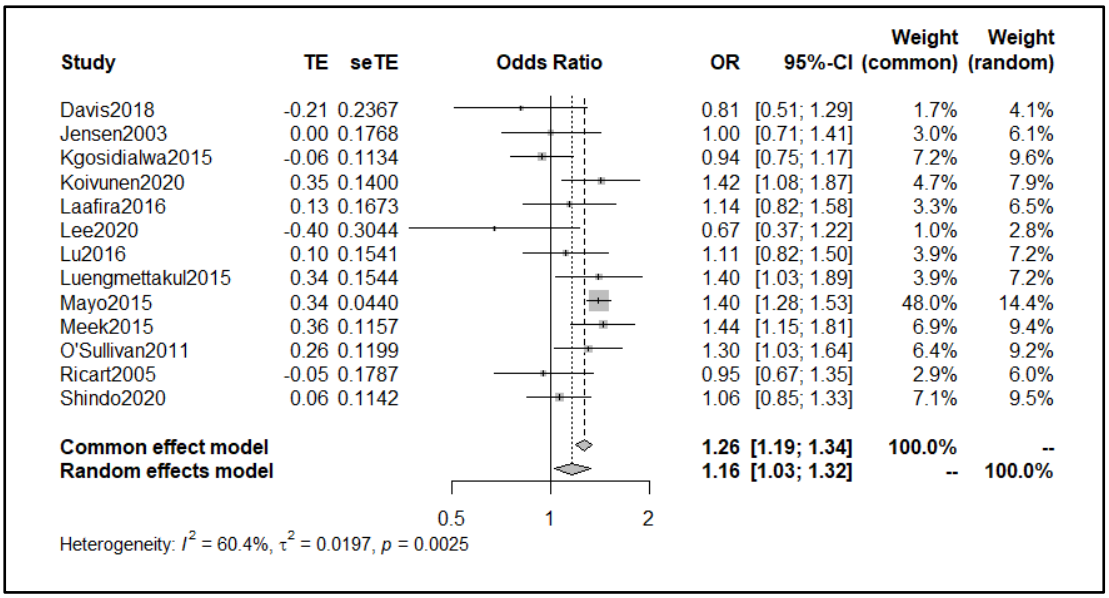

**1.1.2 Induction**



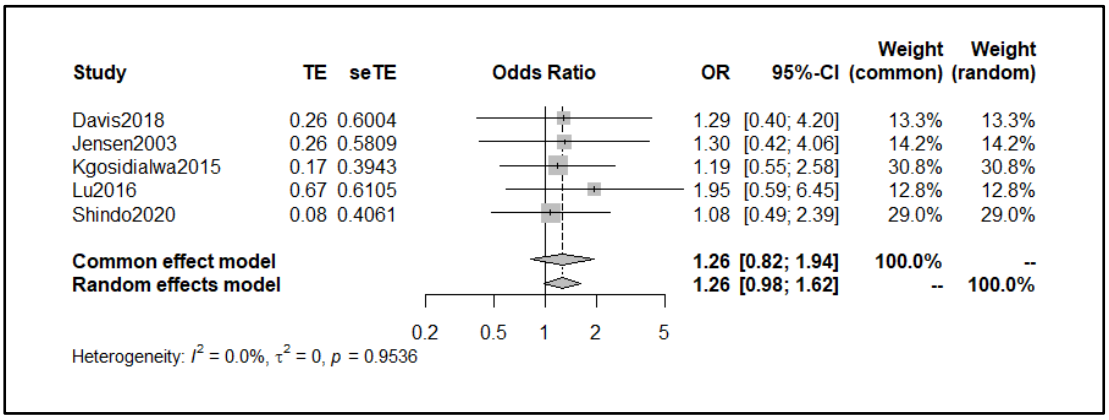

**1.1.3 Instrumental delivery**




**1.1.4 Caesarean section**



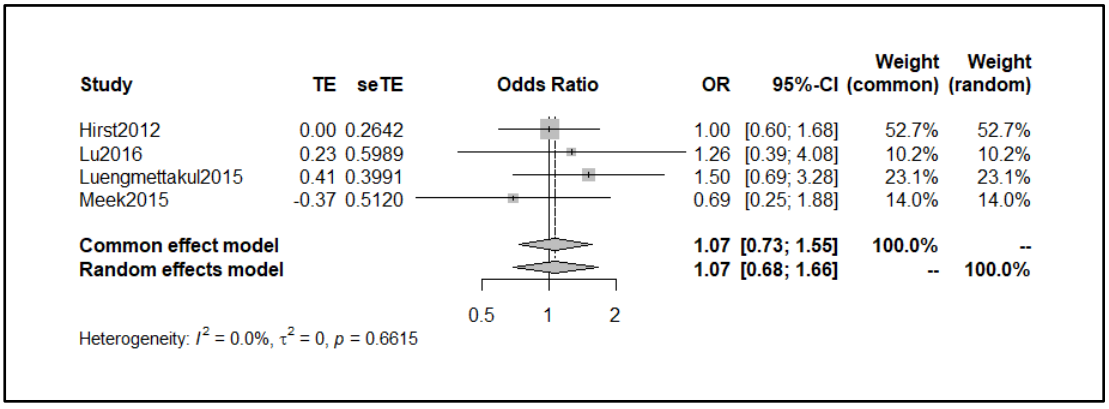

### 1.1.5 Shoulder dystocia




### 1.1.6 PROM

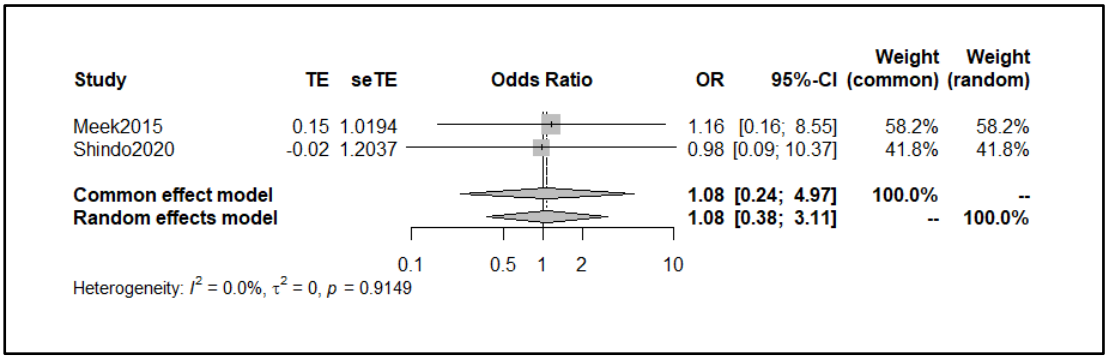
Not applicable.

### 1.1.7 PPH




### 1.2 Neonatal outcomes

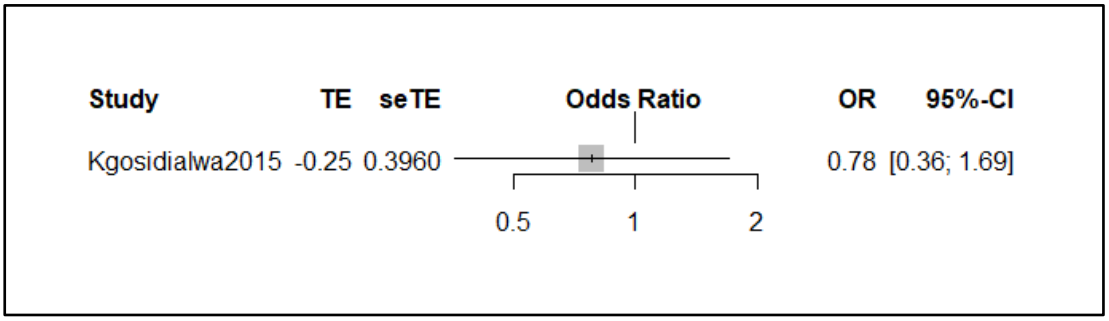
### 1.2.1 Stillbirth



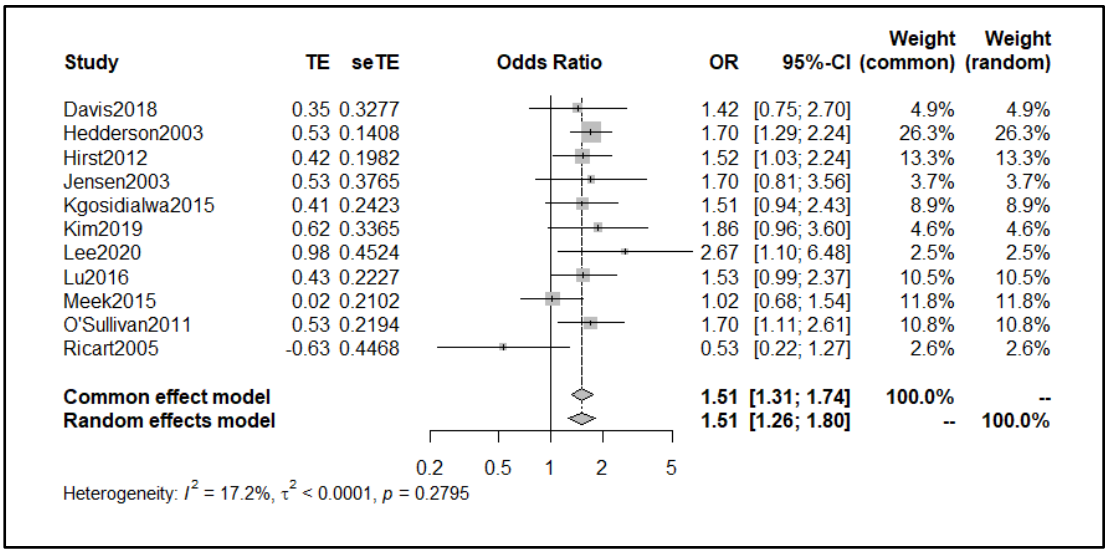

### 1.2.2 Neonatal death

Not applicable.

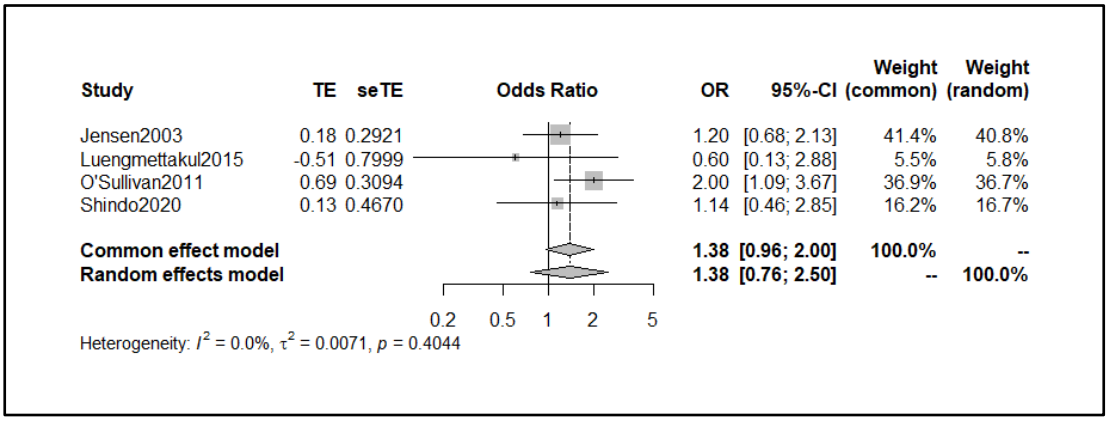
### 1.2.3 Congenital malformation



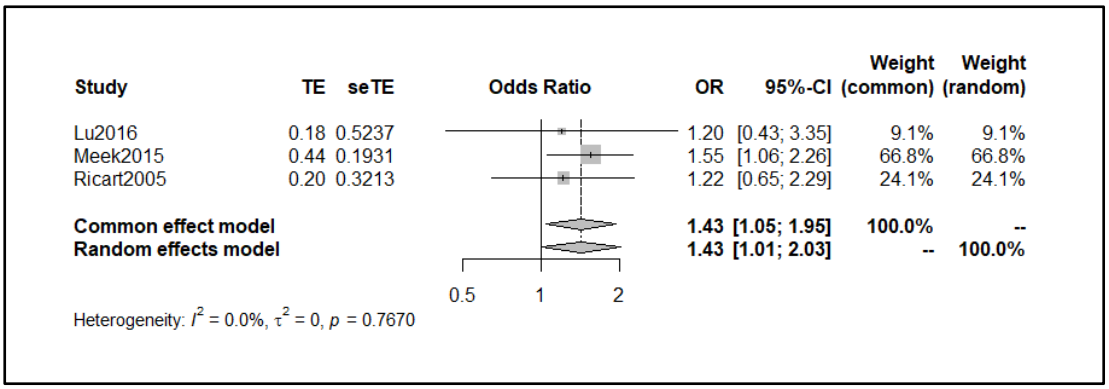

### 1.2.4 Preterm delivery



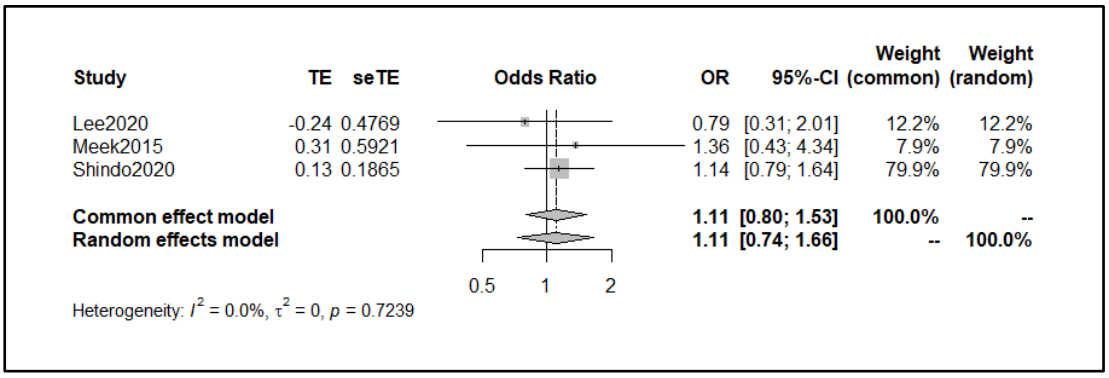

### 1.2.5 RDS



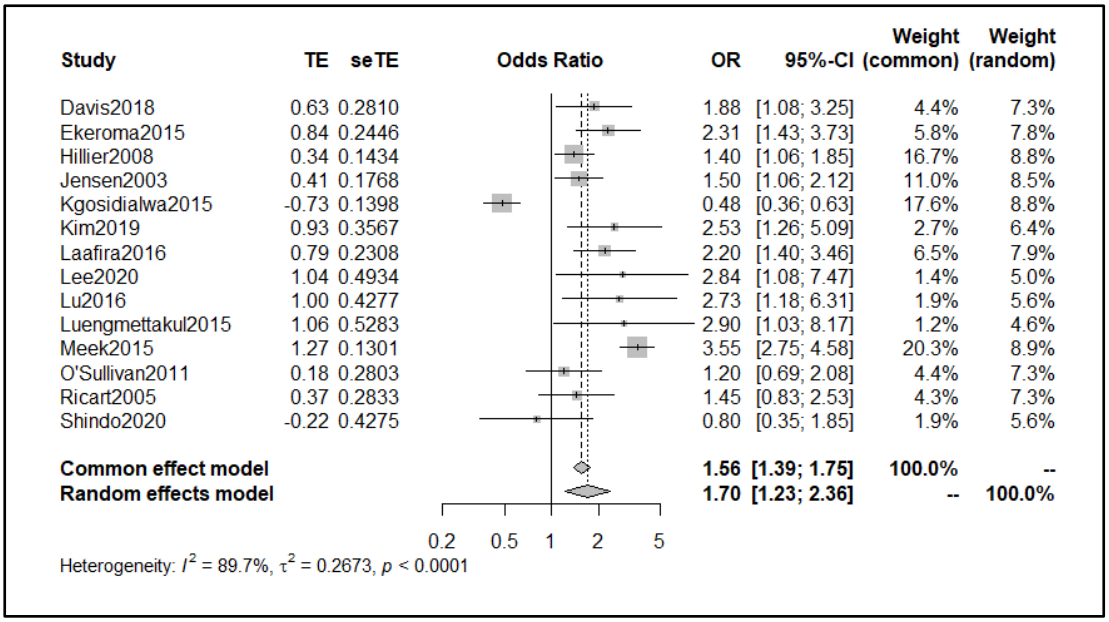

### 1.2.6 Low 1-min Apgar score



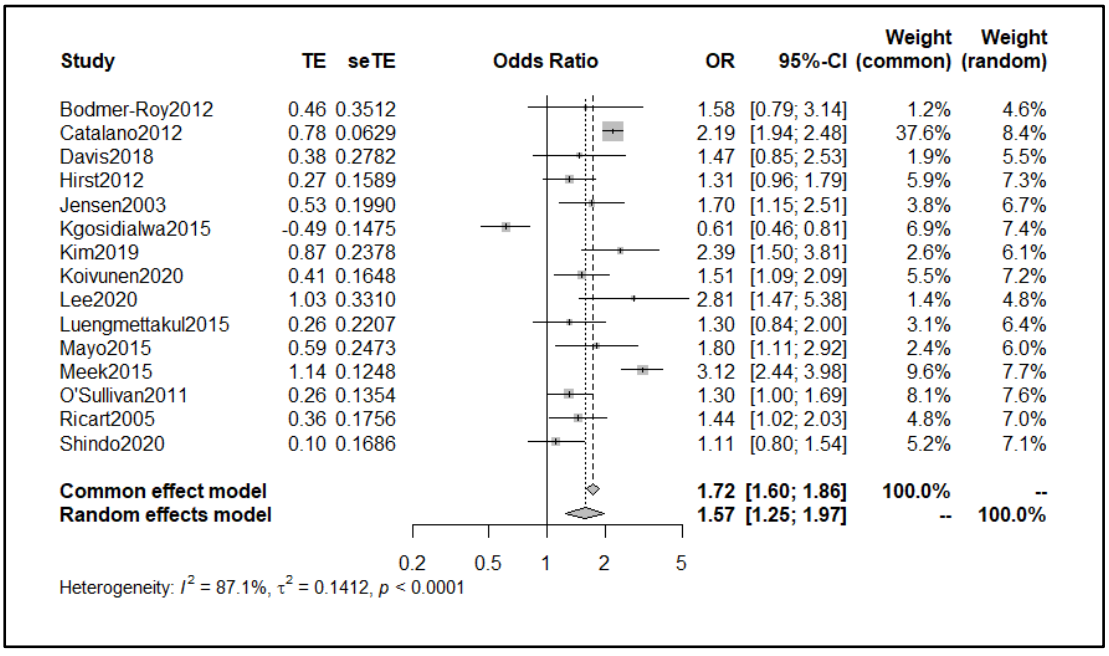

### 1.2.7 Low 5-min Apgar score



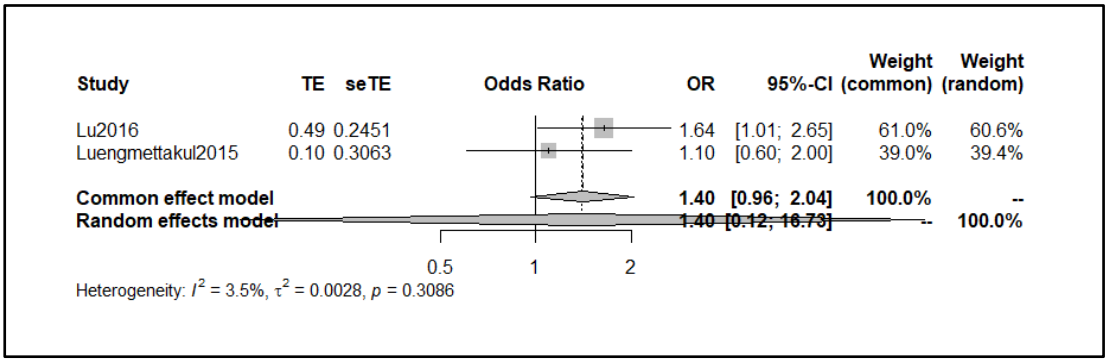

### 1.2.8 Macrosomia



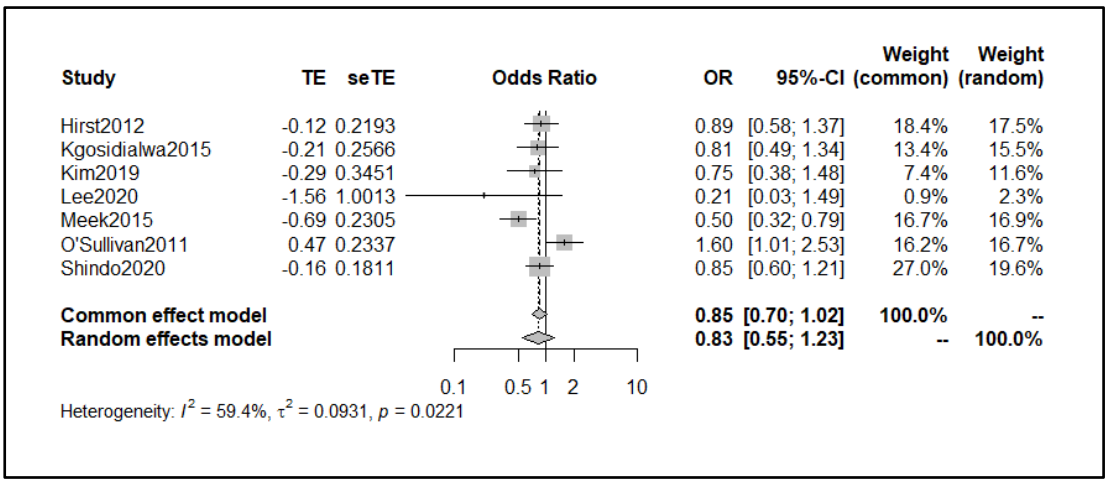

### 1.2.9 LGA



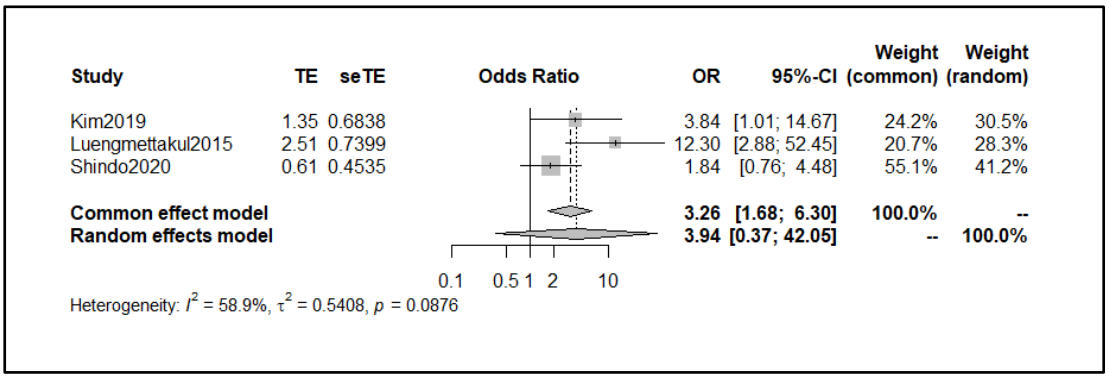

### 1.2.10 LBW



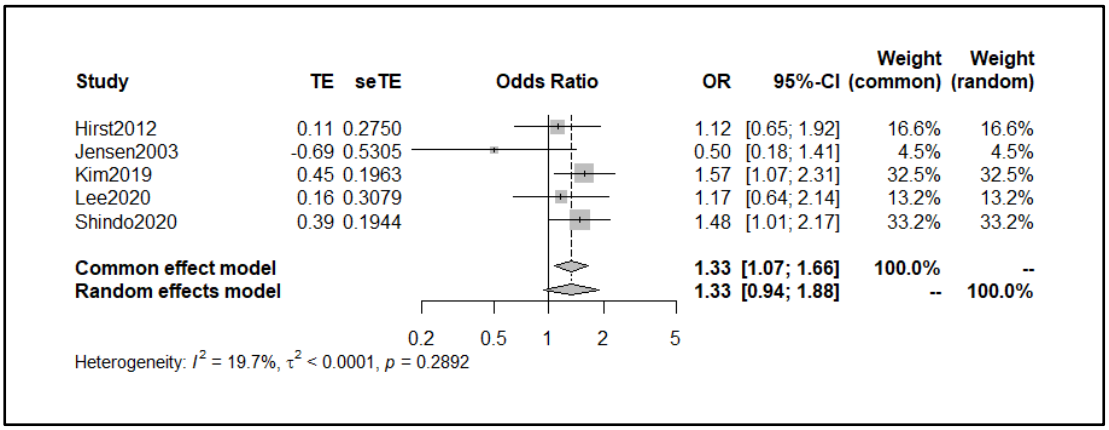
### 1.2.11 SGA



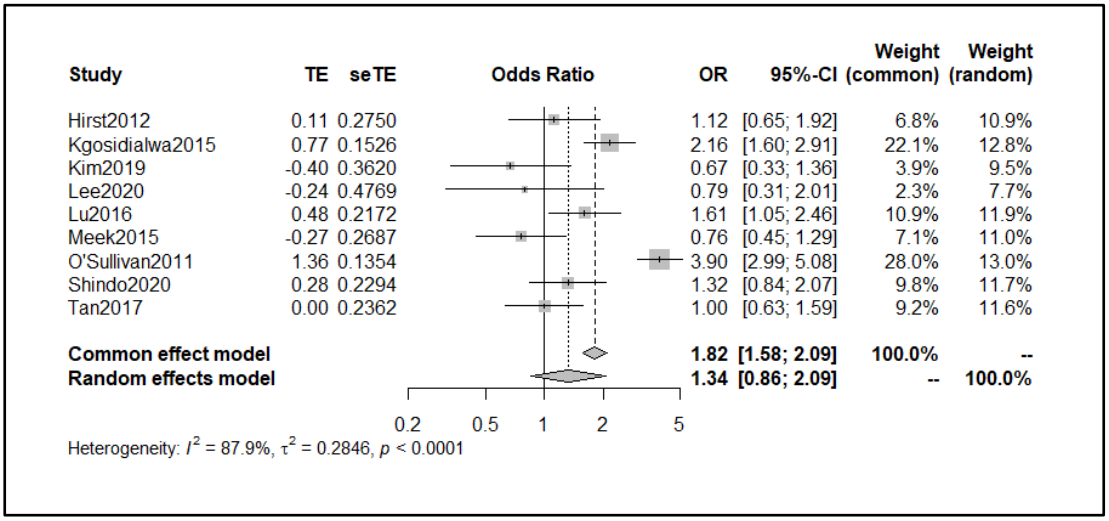

### 1.2.12 Neonatal hypoglycemia




### 1.2.13 Neonatal jaundice



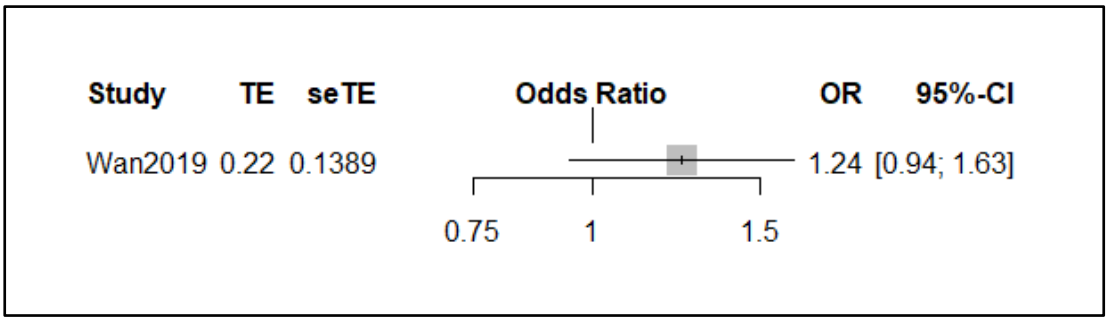

### 1.2.14 NICU admission


Study
TE
seTE
Odds Ratio
OR
95%-CI
Weight (common)
Weight (random)
Hirst2012 0.11 0.2750 1.12 [0.65; 1.92] 6.8% 10.9%
Kgosidialwa2015 0.77 0.1526 2.16 [1.60; 2.91] 22.1% 12.8%
Kim2019 -0.40 0.3620 0.67 [0.33; 1.36] 3.9% 9.5%
Lee2020 -0.24 0.4769 0.79 [0.31; 2.01] 2.3% 7.7%
Lu2016 0.48 0.2172 1.61 [1.05; 2.46] 10.9% 11.9%
Meek2015 -0.27 0.2687 0.76 [0.45; 1.29] 7.1% 11.0%
O'Sullivan2011 1.36 0.1354 3.90 [2.99; 5.08] 28.0% 13.0%
Shindo2020 0.28 0.2294 1.32 [0.84; 2.07] 9.8% 11.7%
Tan2017 0.00 0.2362 1.00 [0.63; 1.59] 9.2% 11.6%
Common effect model 1.82 [1.58; 2.09] 100.0% --
Random effects model 1.34 [0.86; 2.09] -- 100.0%
0.2
0.5
1
2
5
Heterogeneity: $I^2$ = 87.9%, $\tau^2$ = 0.2846, $p$ < 0.0001

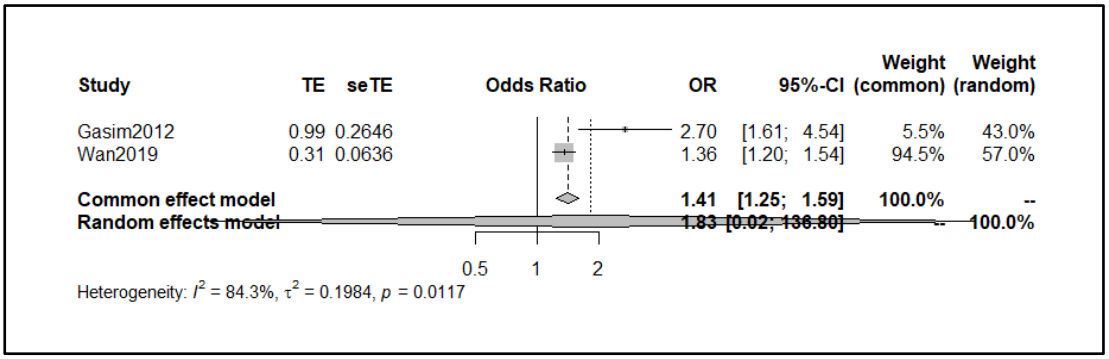
**Supplemental Figure S2. Meta-analysis of adverse pregnancy outcomes with and without adjustment for confounders in subset B (with insulin use)**

**2.1 Maternal outcomes**

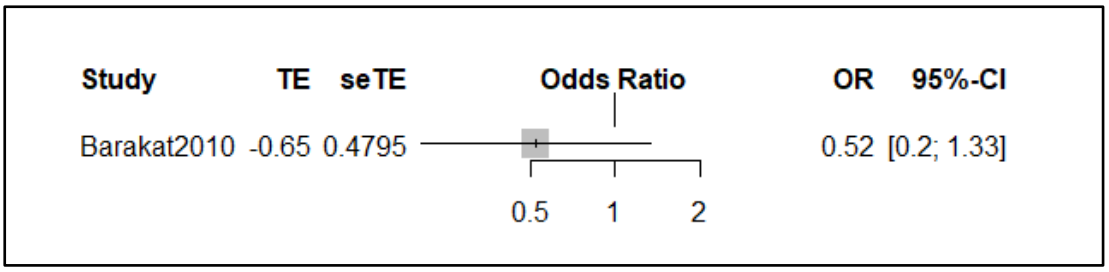
**2.1.1 Pre-eclampsia**



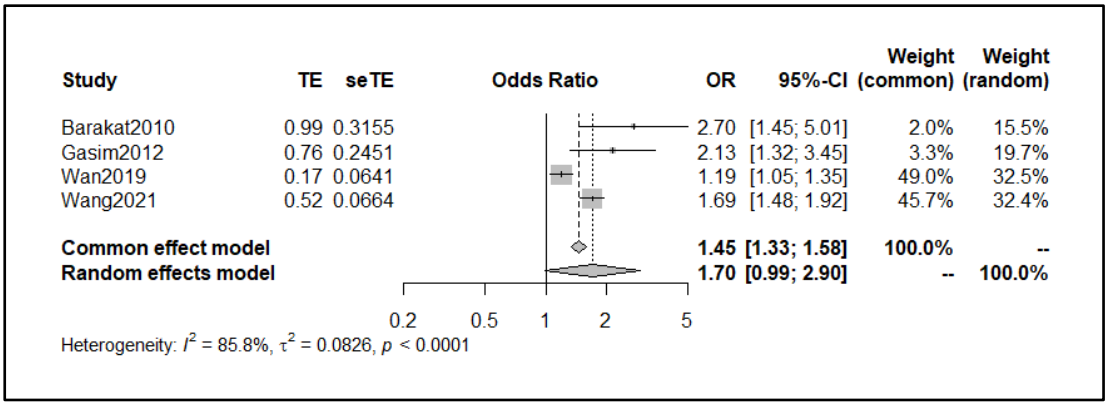

**2.1.2 Induction**



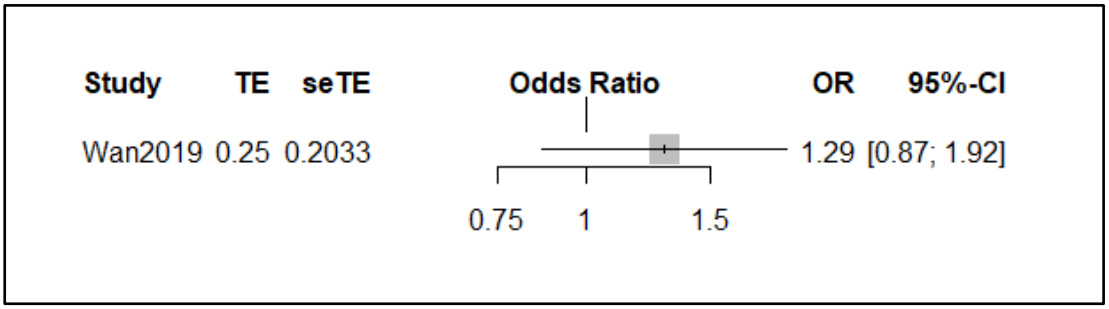

**2.1.3 Instrumental delivery**




**2.1.4 Caesarean section**



### 2.1.5 Shoulder dystocia




### 2.1.6 PROM

Not applicable

### 2.1.7 PPH

Not applicable

### 2.2 Neonatal outcomes

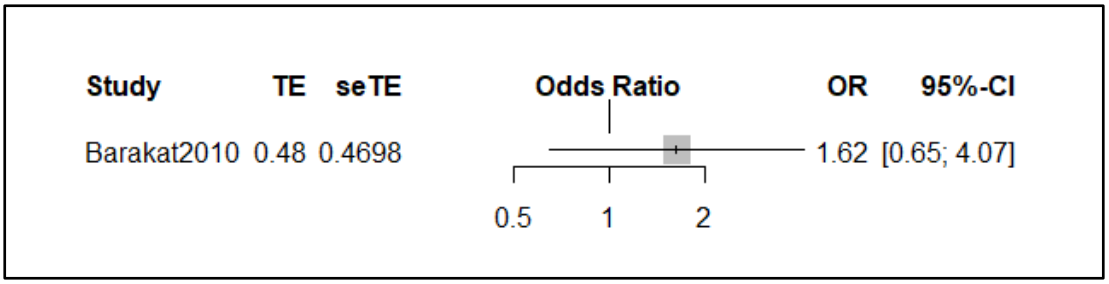
### 2.2.1 Stillbirth

Not applicable

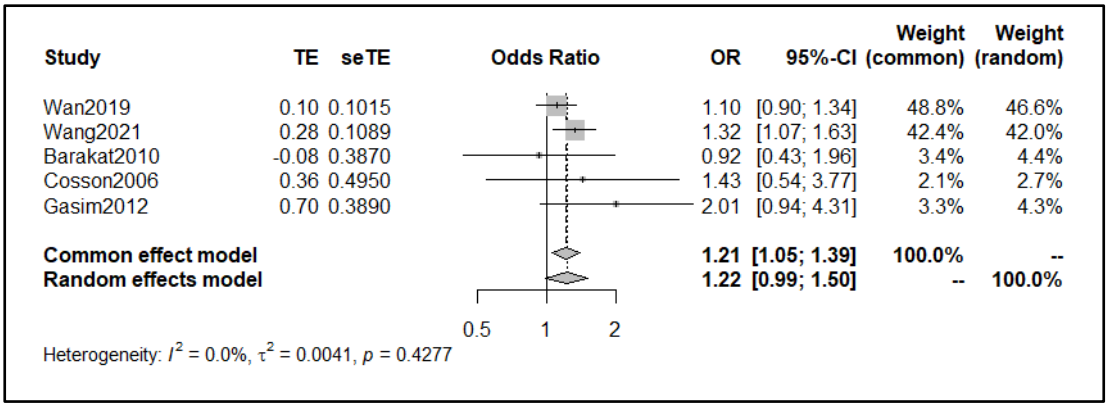
### 2.2.2 Neonatal death

Not applicable

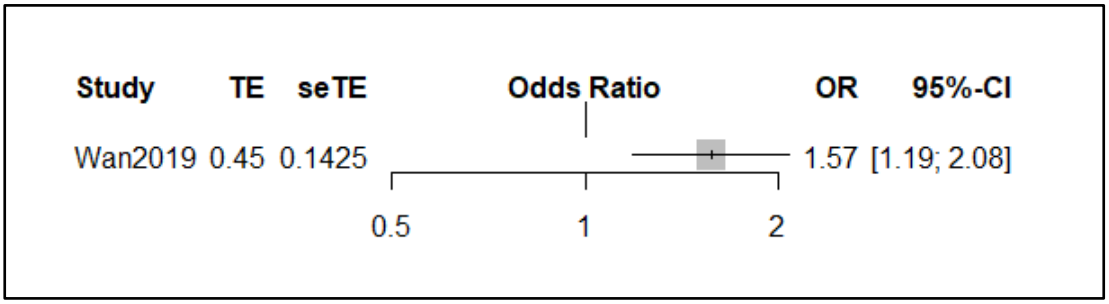
### 2.2.3 Congenital malformation



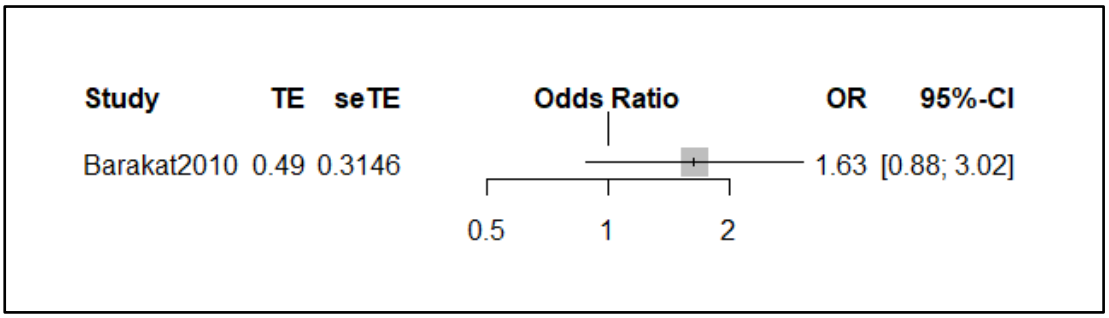

### 2.2.4 Preterm delivery



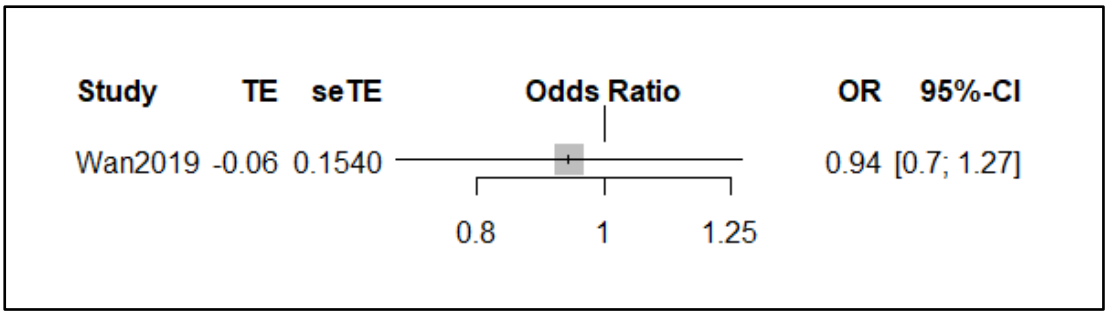
### 2.2.5 RDS



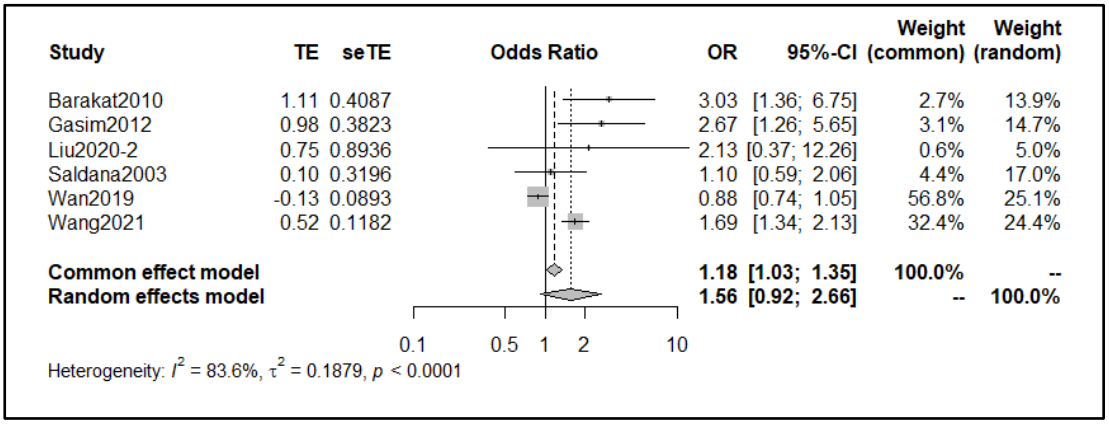

### 2.2.6 Low 1-min Apgar score



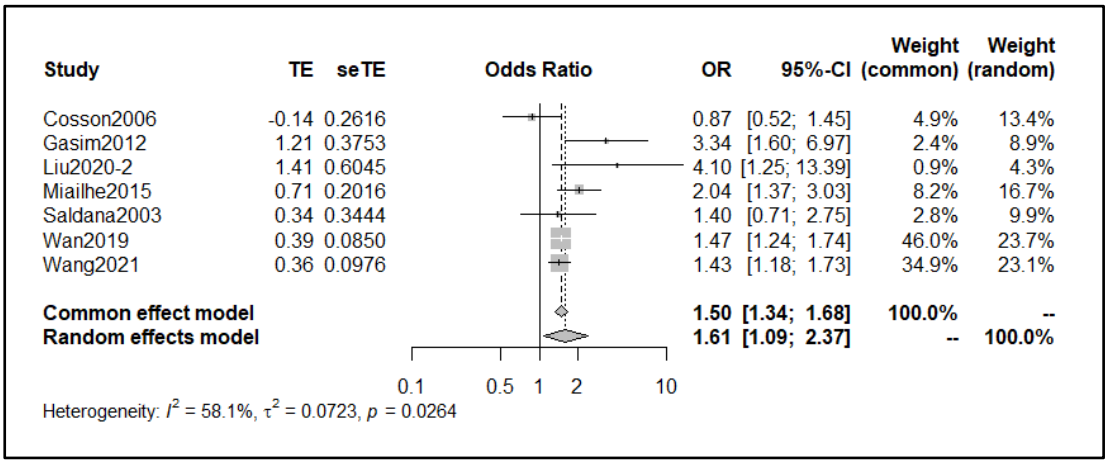

### 2.2.7 Low 5-min Apgar score



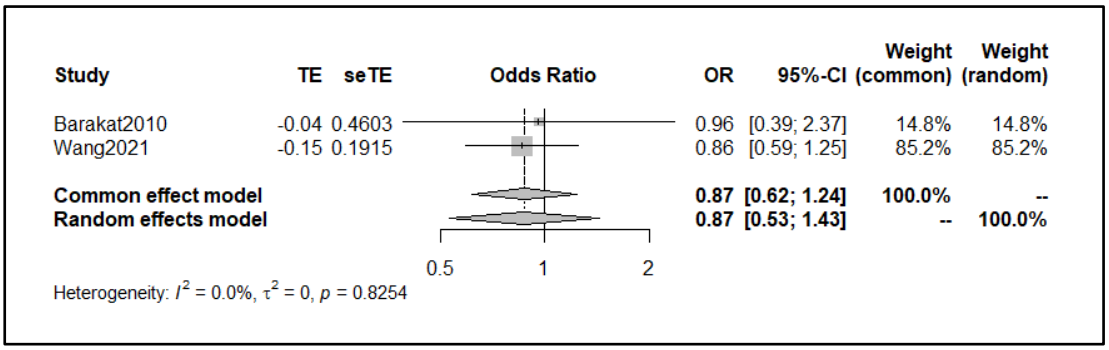

### 2.2.8 Macrosomia



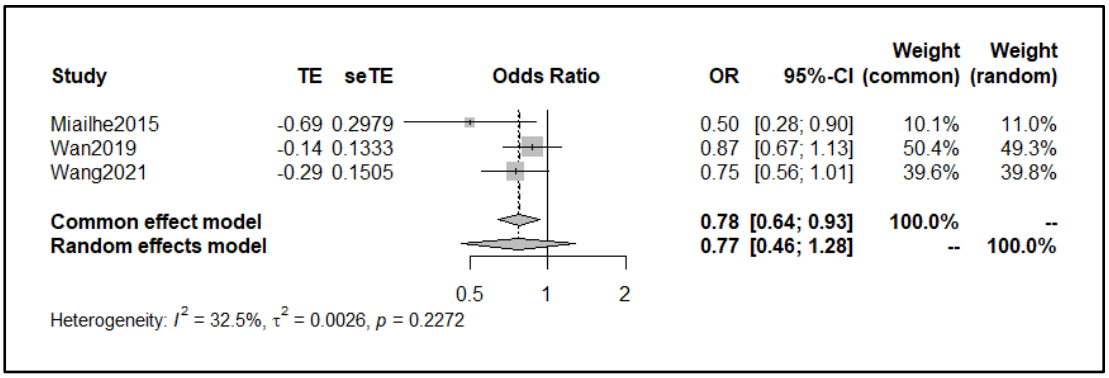
### 2.2.9 LGA




### 2.2.10 LBW



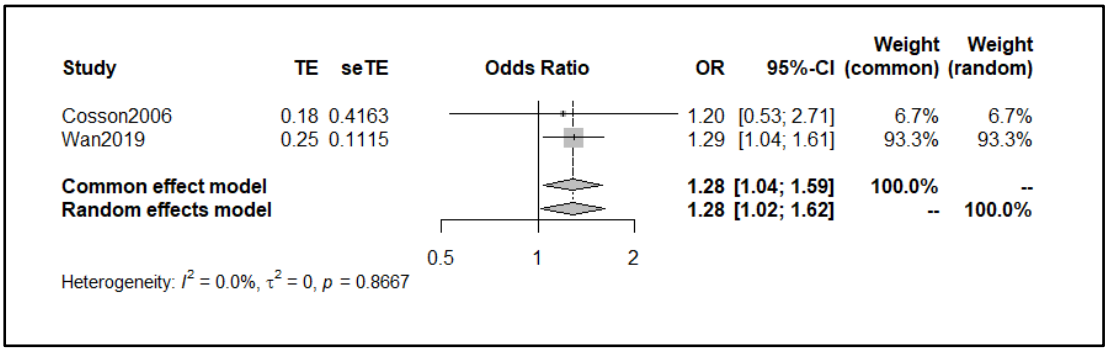

### 2.2.11 SGA



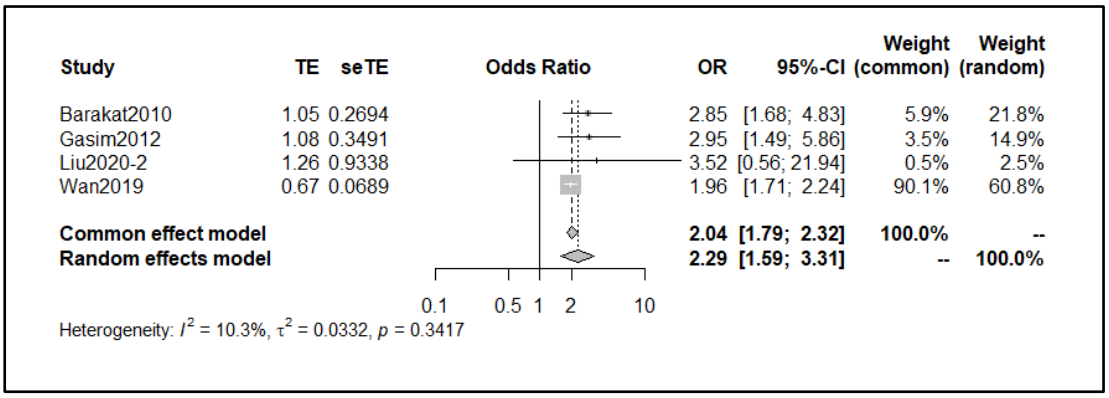

### 2.2.12 Neonatal hypoglycemia

Not applicable

### 2.2.13 Neonatal jaundice



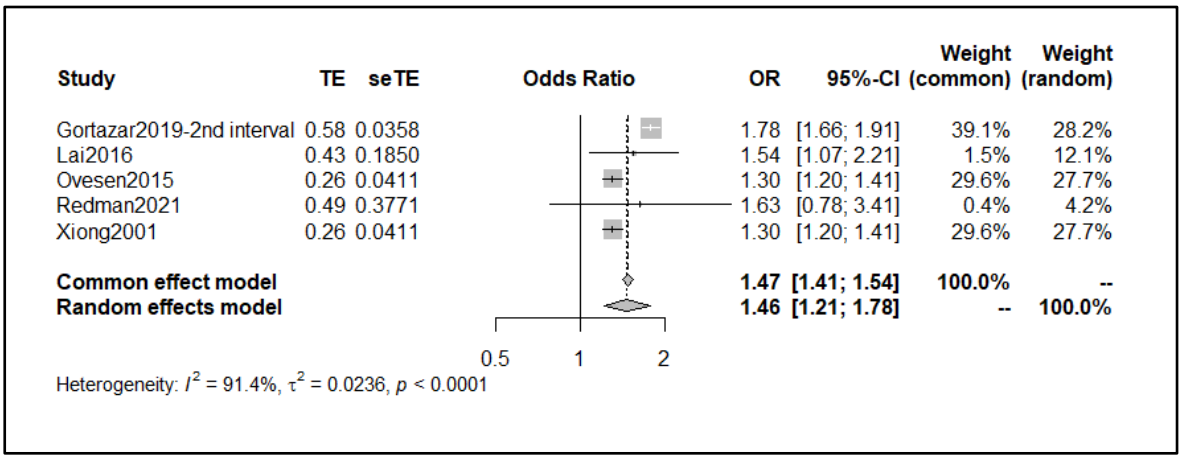

### 2.2.14 NICU admission



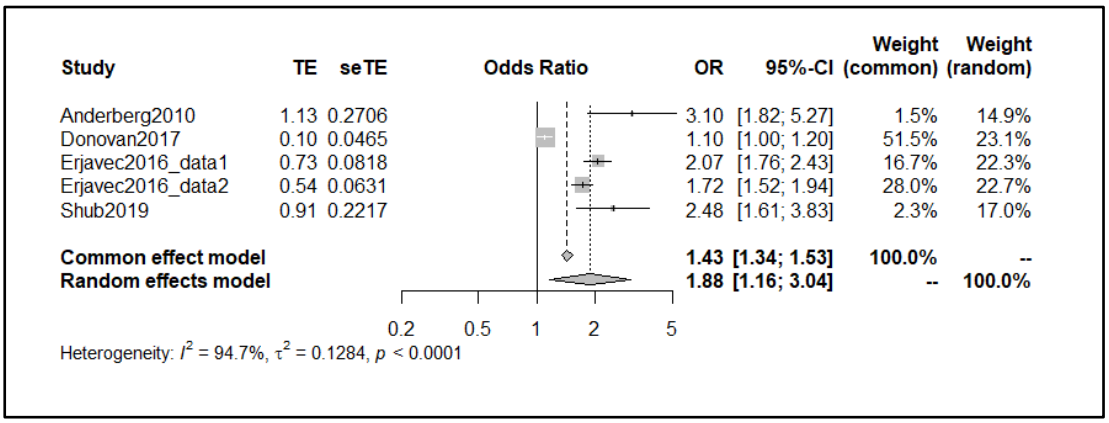
**Supplemental Figure S3. Meta-analysis of adverse pregnancy outcomes with and without adjustment for confounders in Subset C (not reported insulin use)**

**3.1 Maternal outcomes**

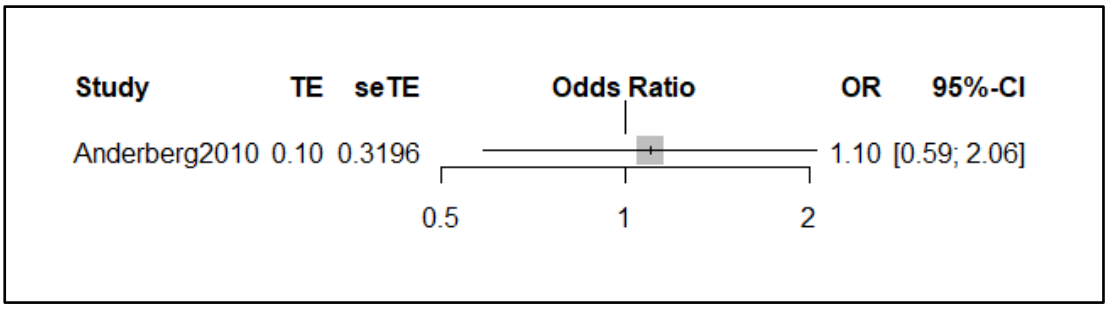
**3.1.1 Pre-eclampsia**



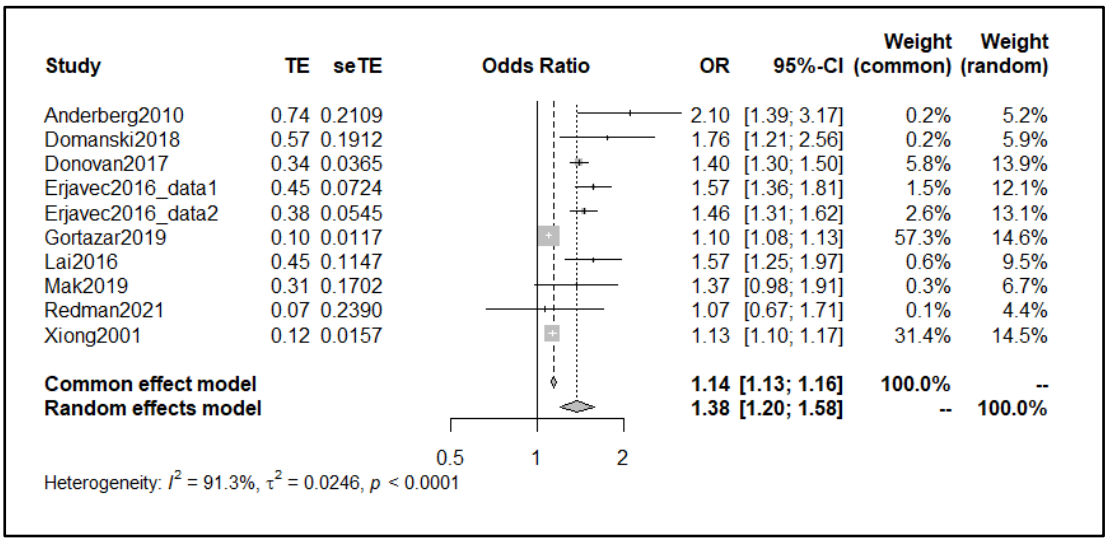

**3.1.2 Induction**



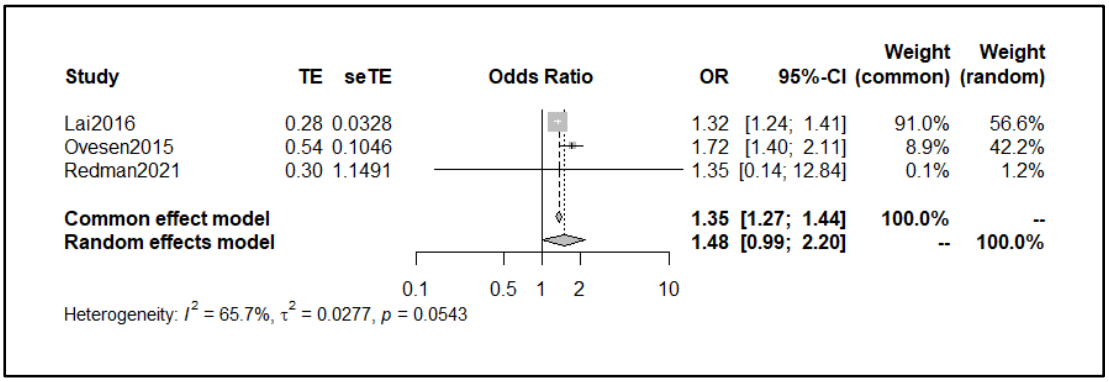

**3.1.3 Instrumental delivery**



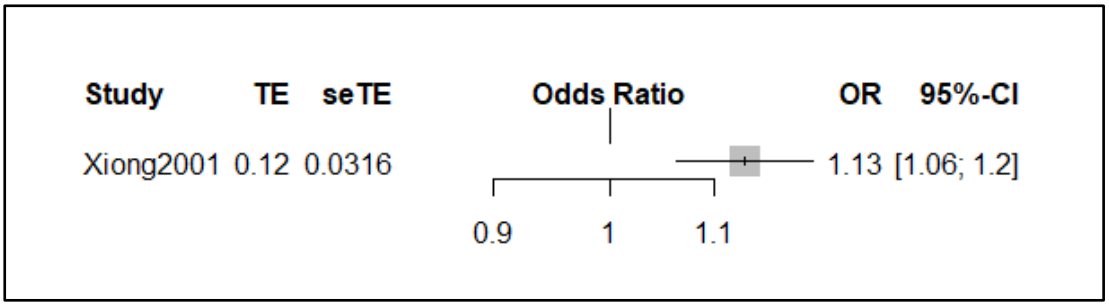

**3.1.4 Caesarean section**



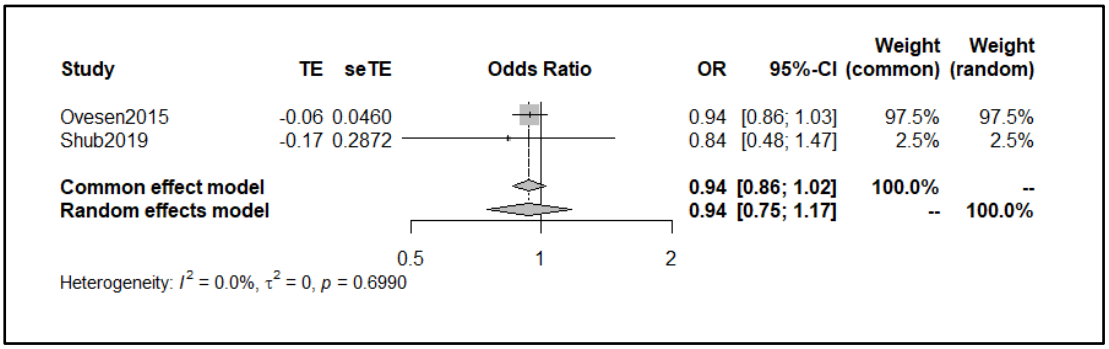

### 3.1.5 Shoulder dystocia




### 3.1.6 PROM

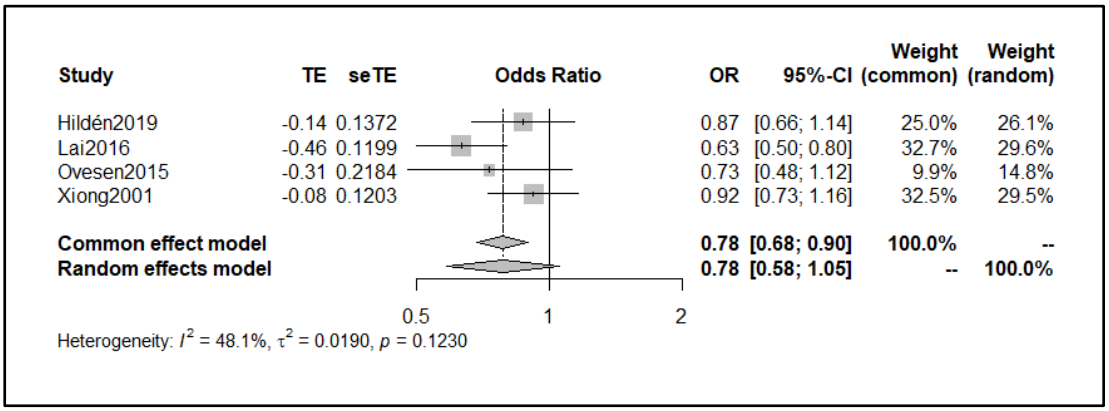



### 3.1.7 PPH

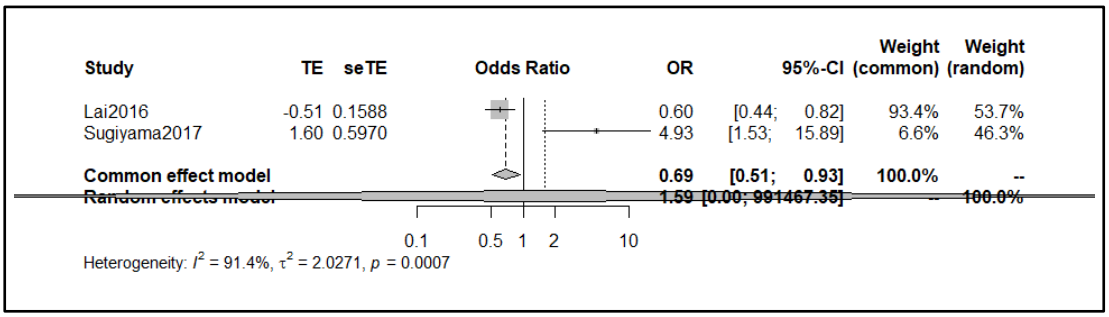



### 3.2 Neonatal outcomes

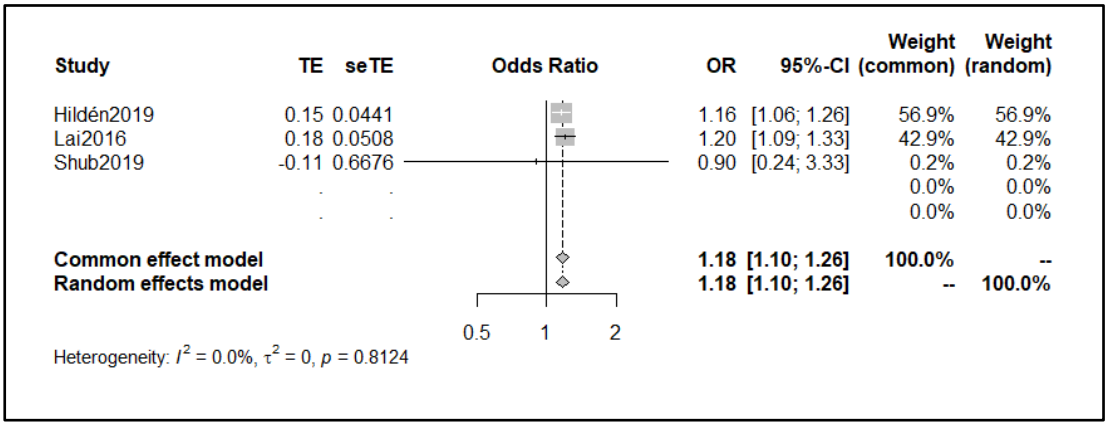
#### 3.2.1 Stillbirth



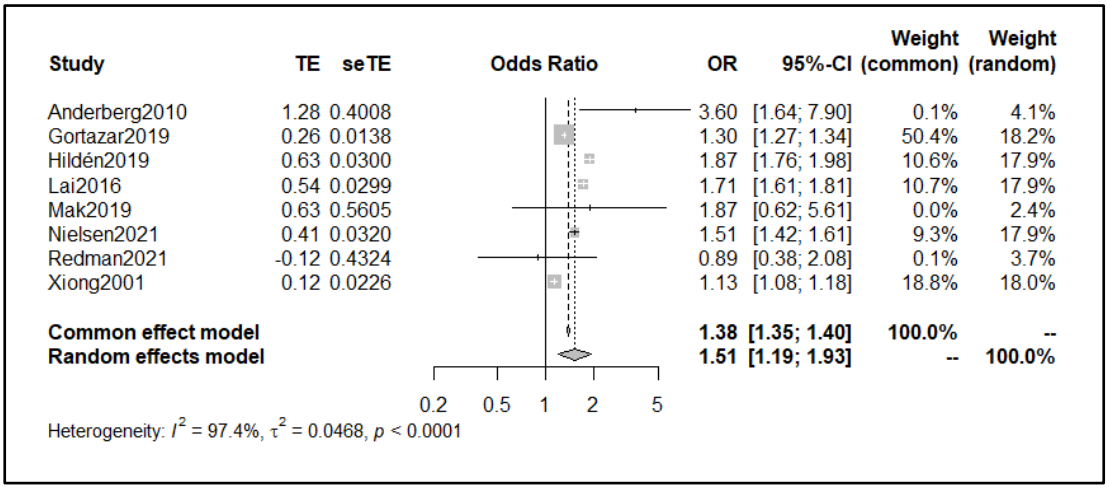

#### 3.2.2 Neonatal death



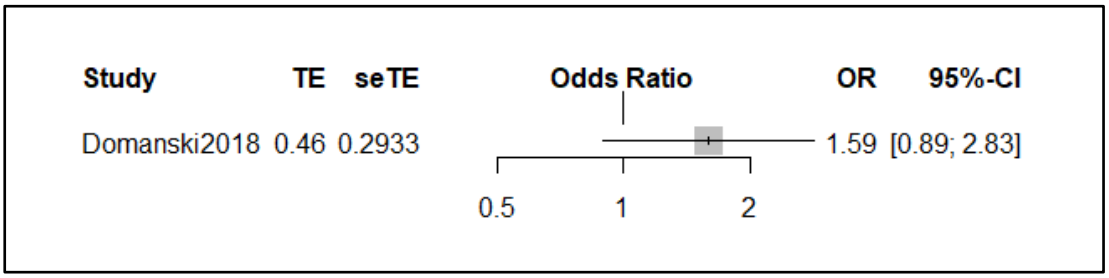

#### 3.2.3 Congenital malformation



### 3.2.4 Preterm delivery



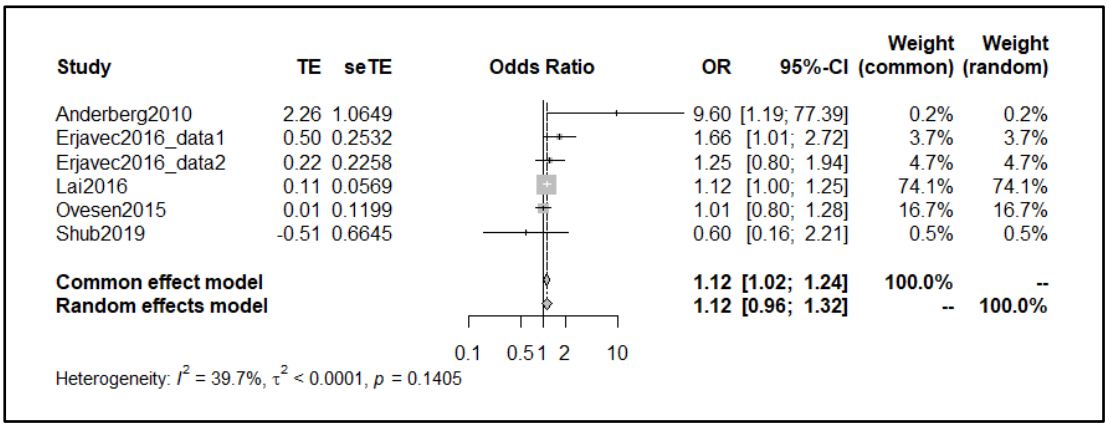

### 3.2.5 RDS



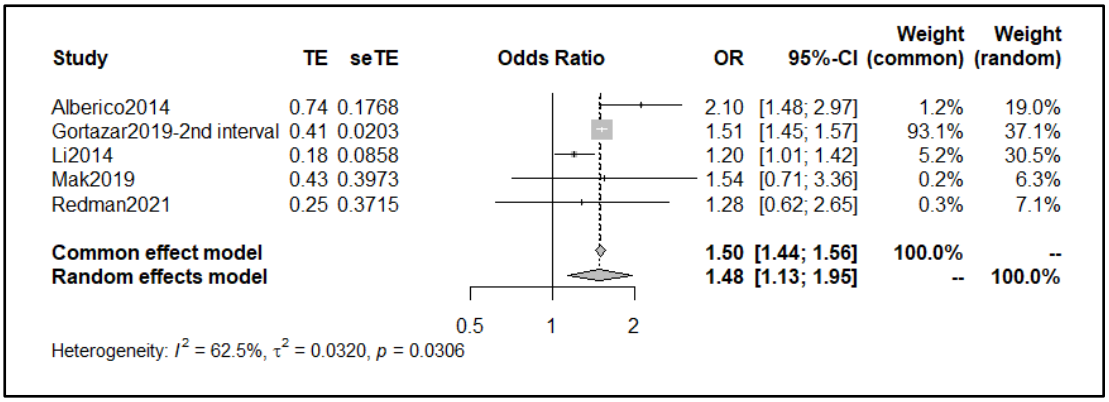

### 3.2.6 Low 1-min Apgar score

Not applicable

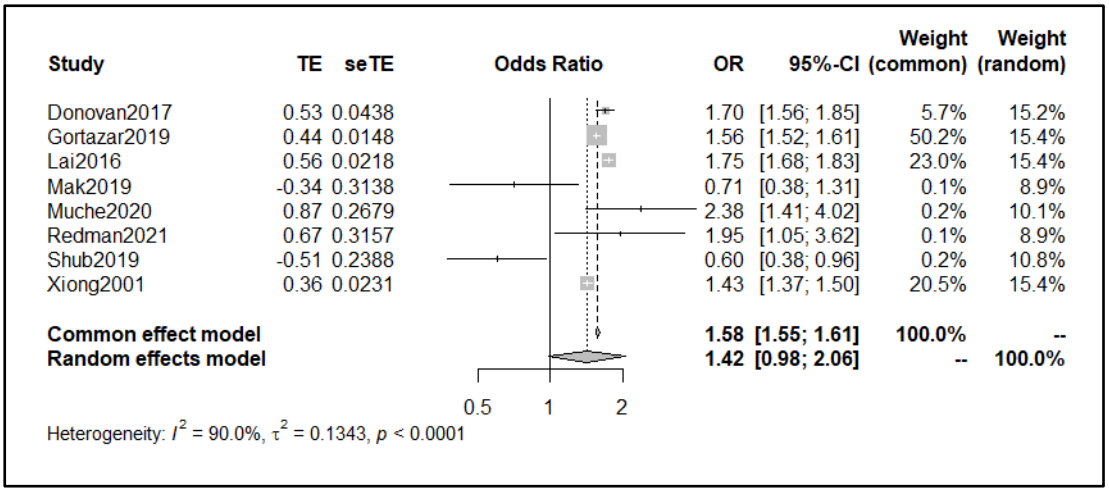
### 3.2.7 Low 5-min Apgar score



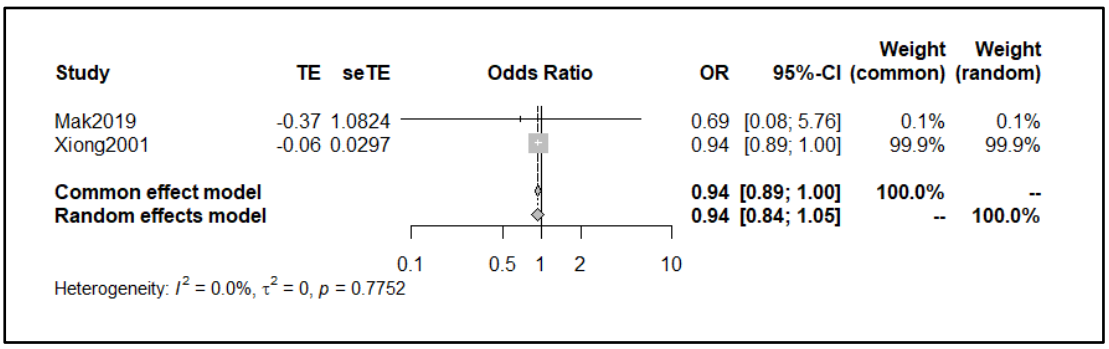

### 3.2.8 Macrosomia



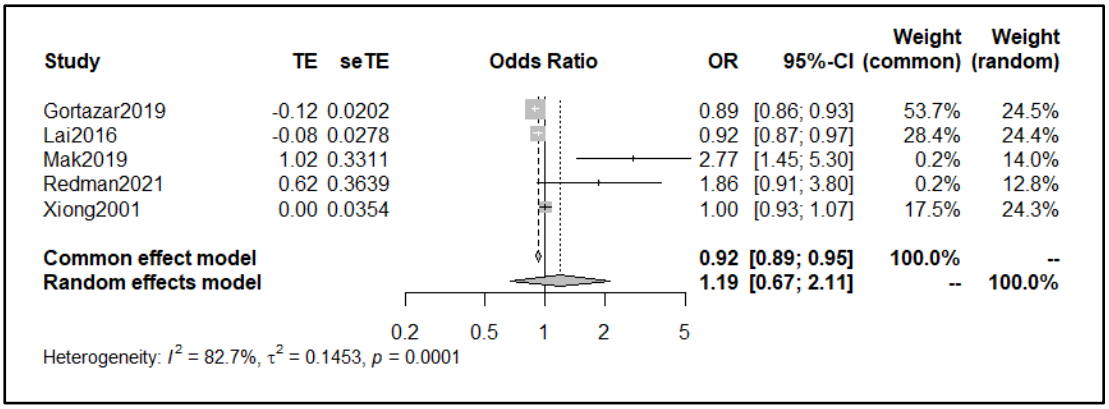

### 3.2.9 LGA



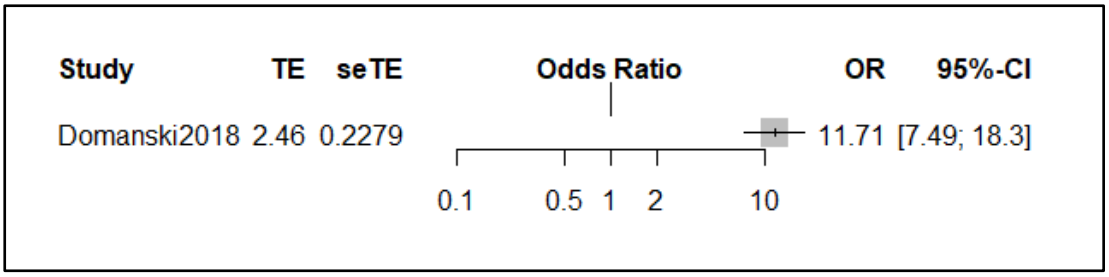

### 3.2.10 LBW




### 3.2.11 SGA



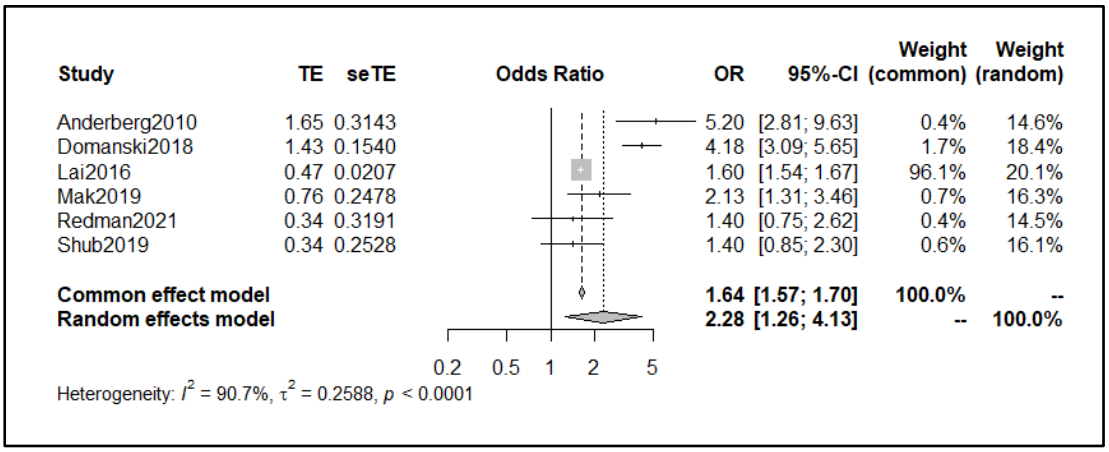

### 3.2.12 Neonatal hypoglycemia



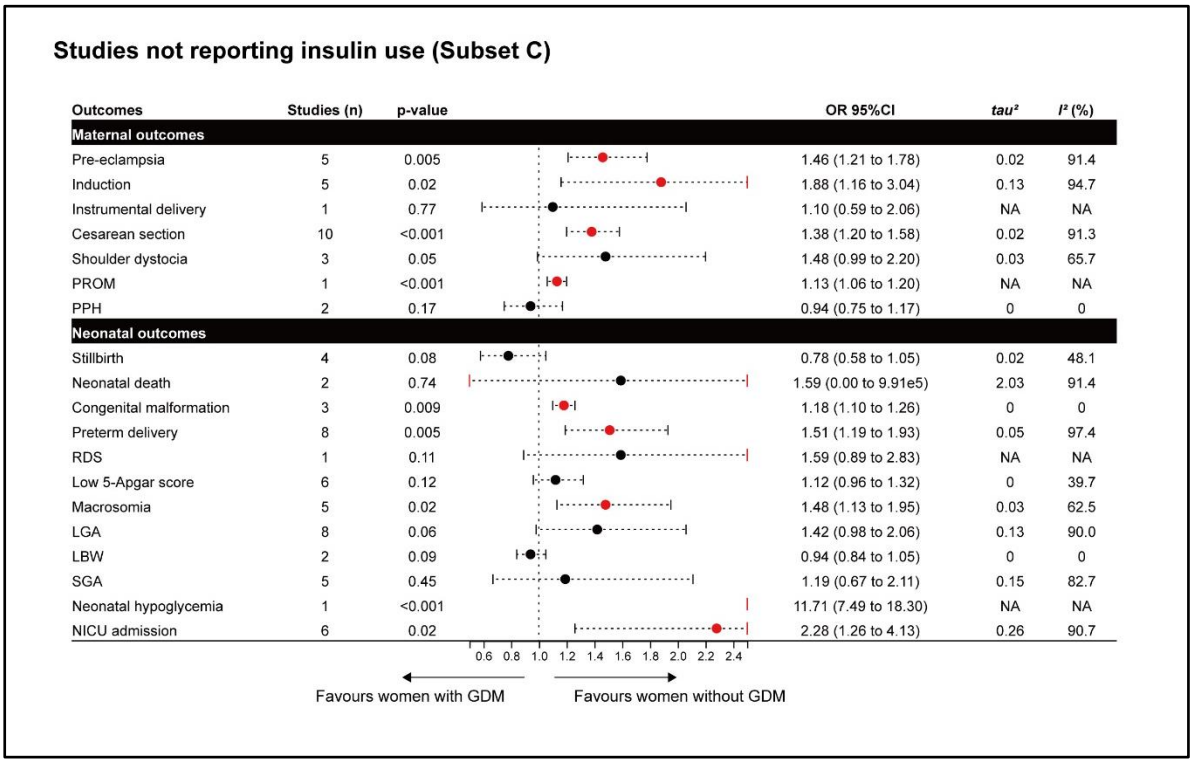

### 3.2.13 Neonatal jaundice

Not applicable

### 3.2.14 NICU admission



**Supplemental Figure S4. Forest plot of adverse outcomes between women with and without GDM in subset C (no reported insulin use)**

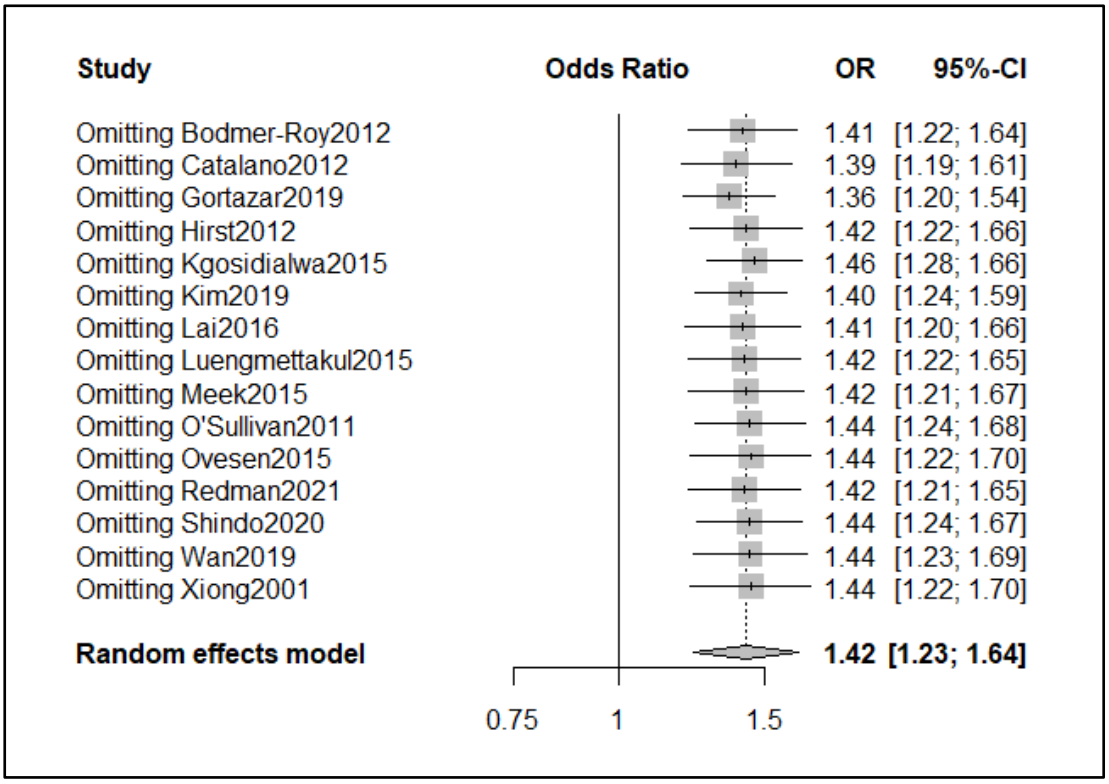



NA: Not applicable

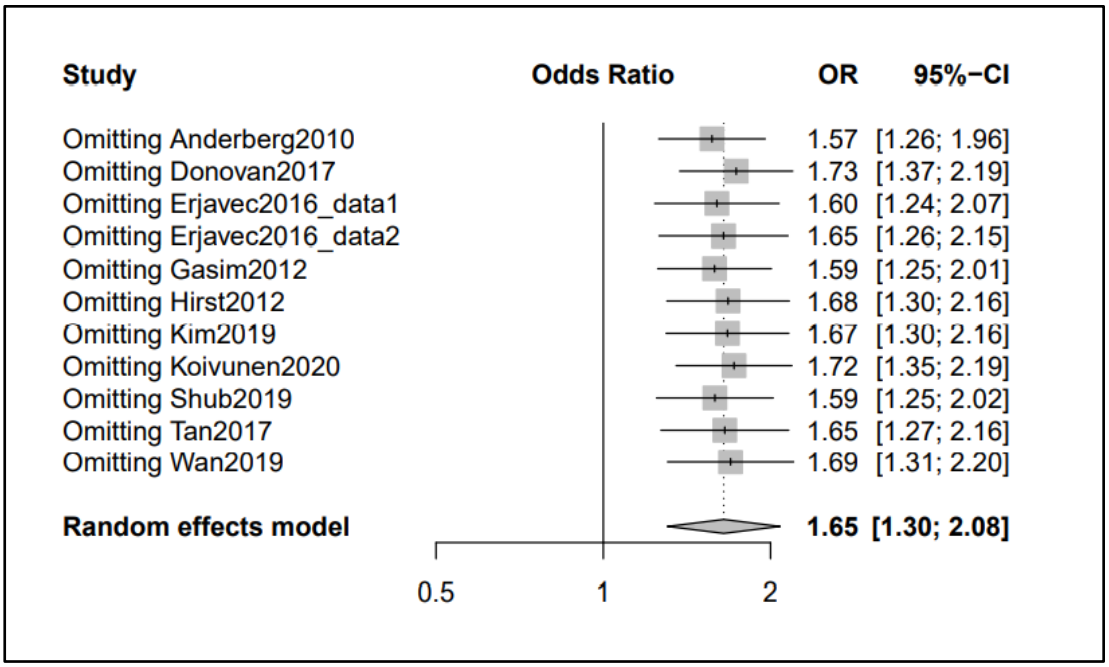
**Supplemental Figure S5. Sensitivity analysis by omitting individual study**

**5.1 Maternal outcomes**

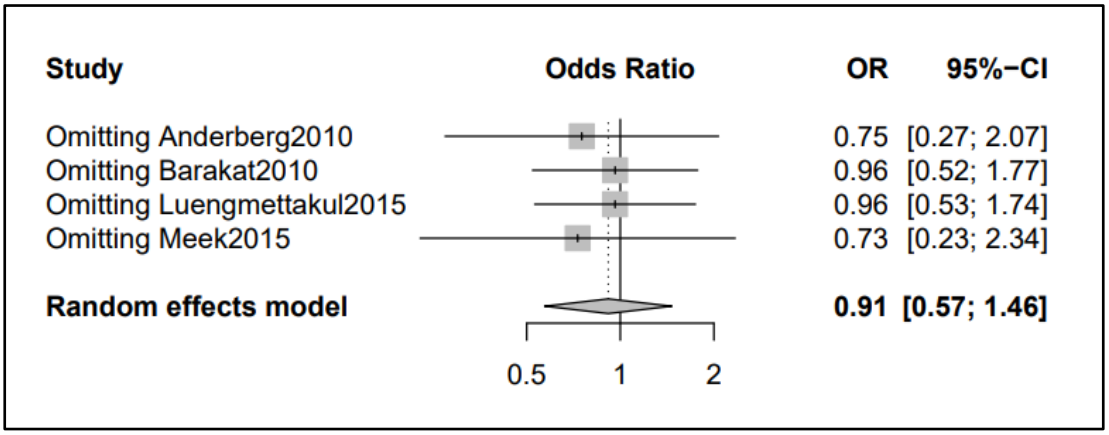
**5.1.1 Pre-eclampsia**



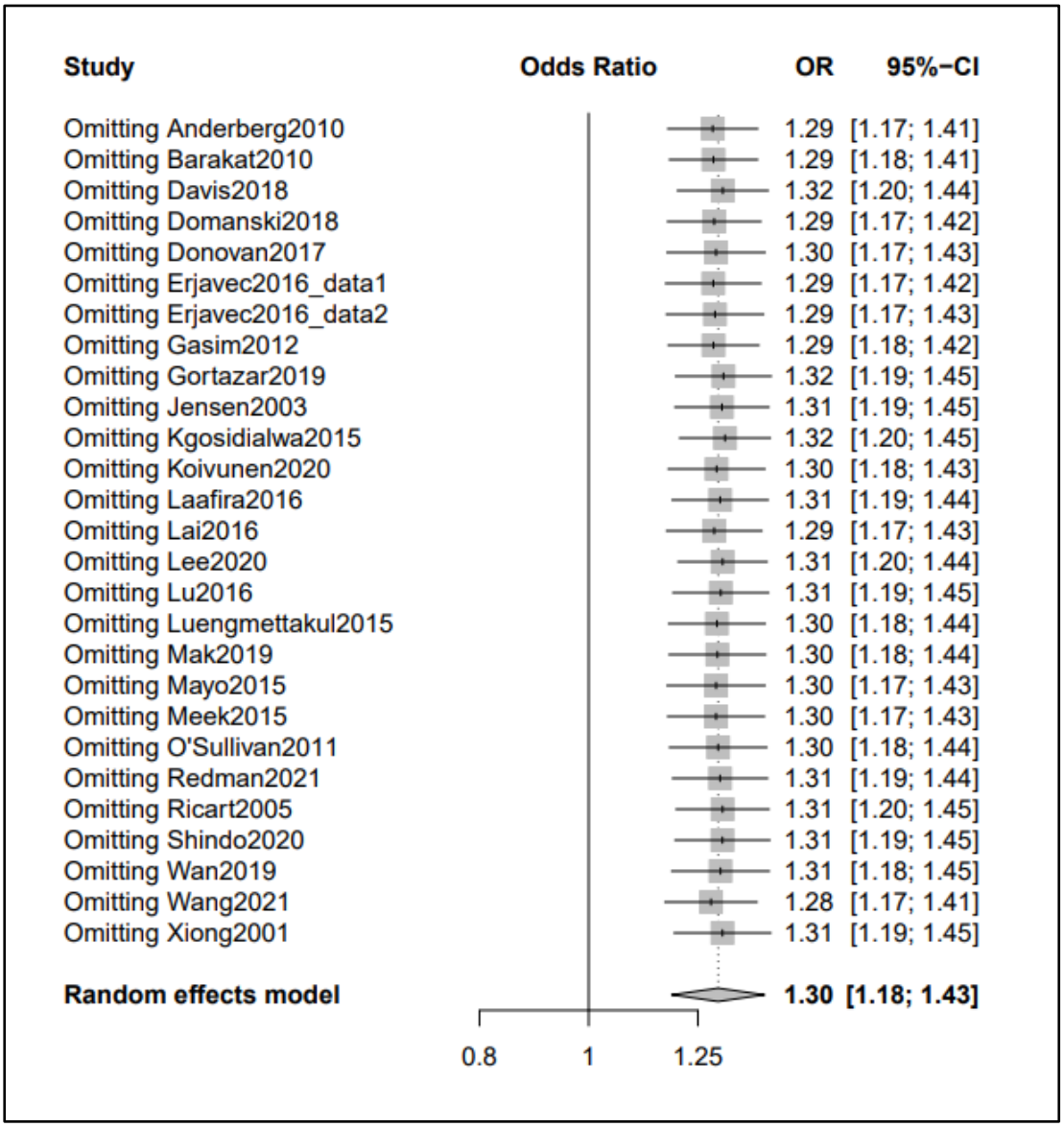

**5.1.2 Induction**




**5.1.3 Instrumental delivery**



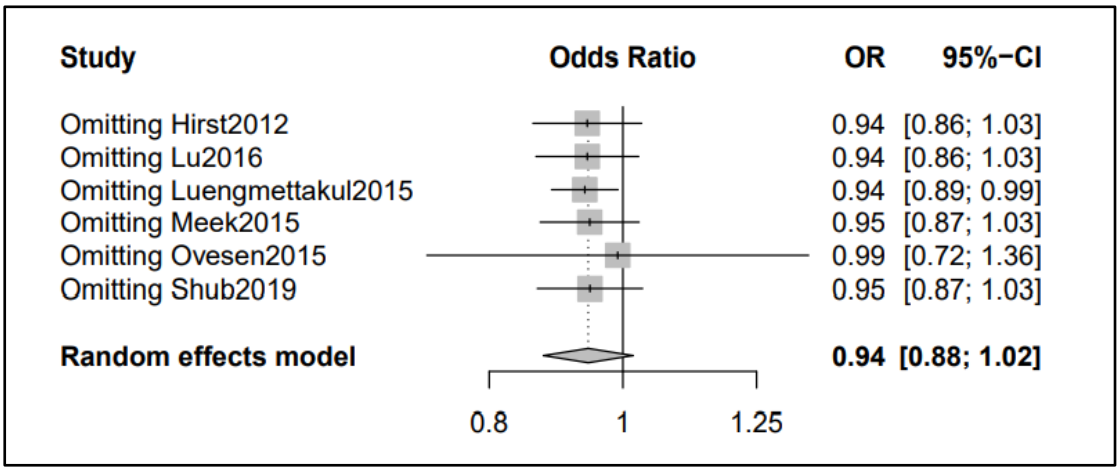

**5.1.4 Caesarean section**



**5.1.5 PROM**

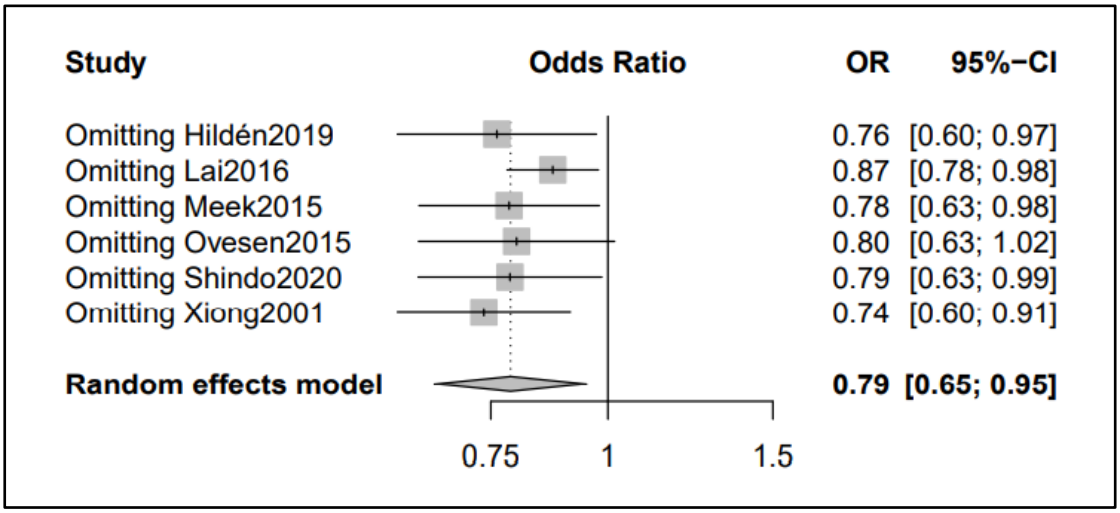
Not applicable

**5.1.6 PPH**




**5.2 Neonatal outcomes**

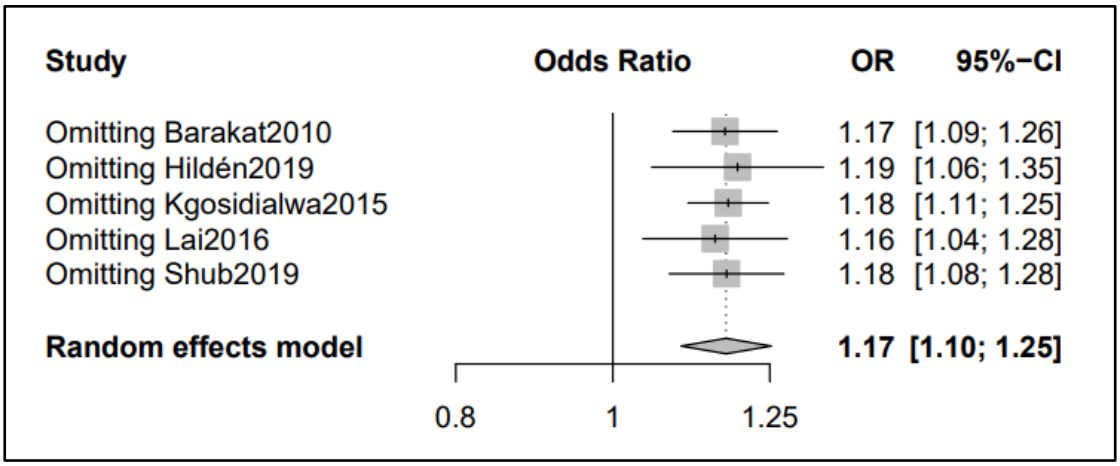
**5.2.1 Stillbirth**



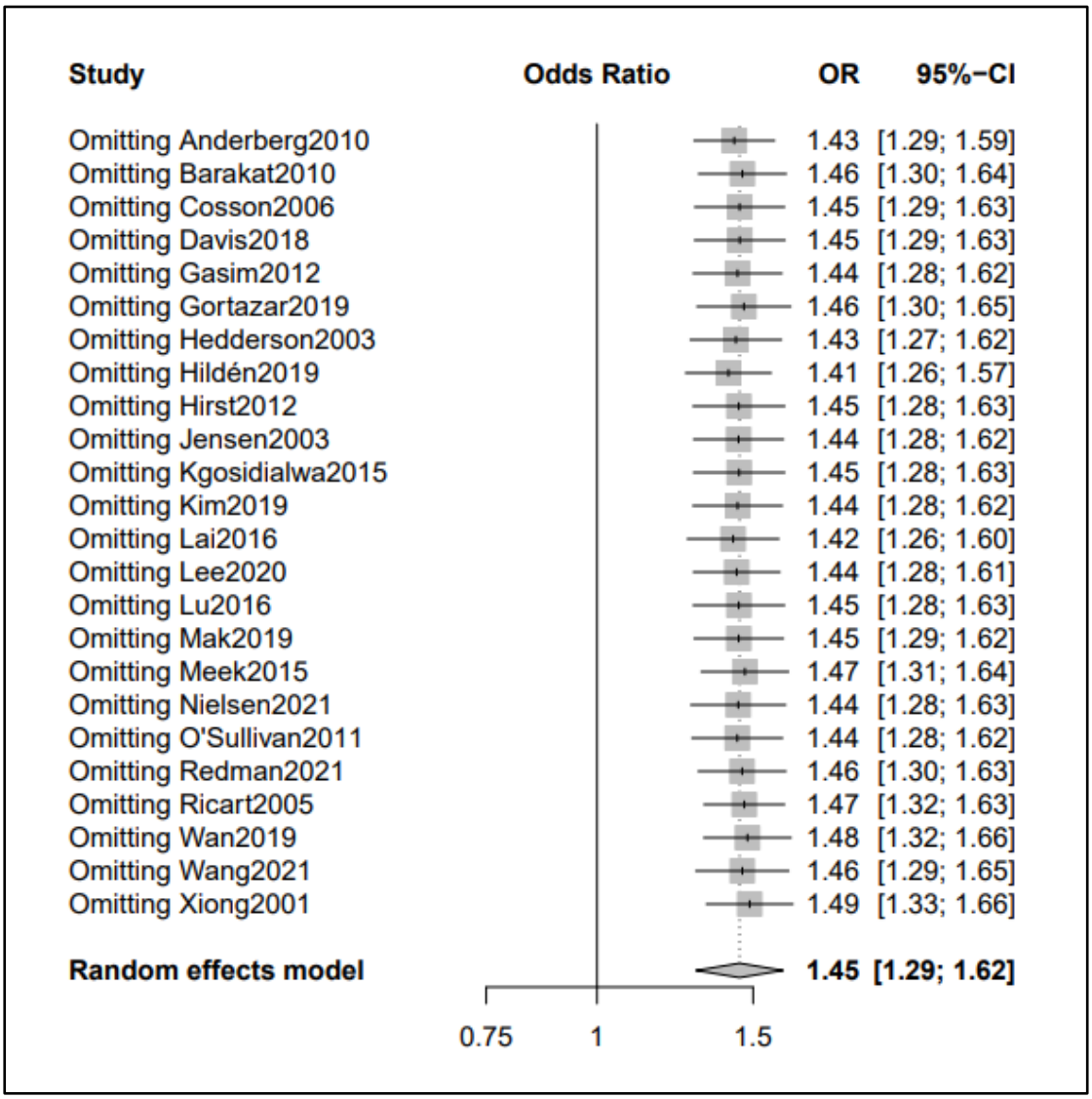

**5.2.2 Neonatal death**

Not applicable

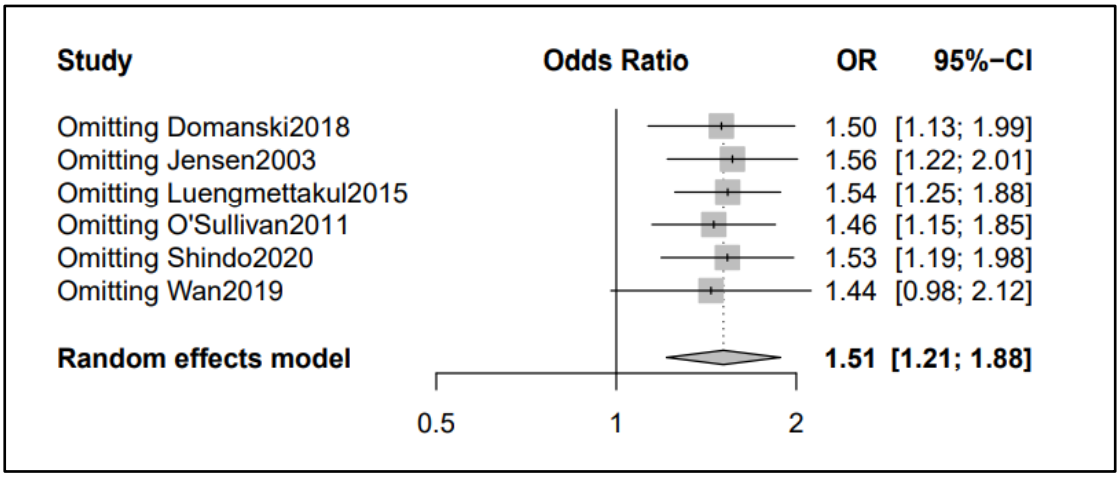
**5.2.3 Congenital malformation**



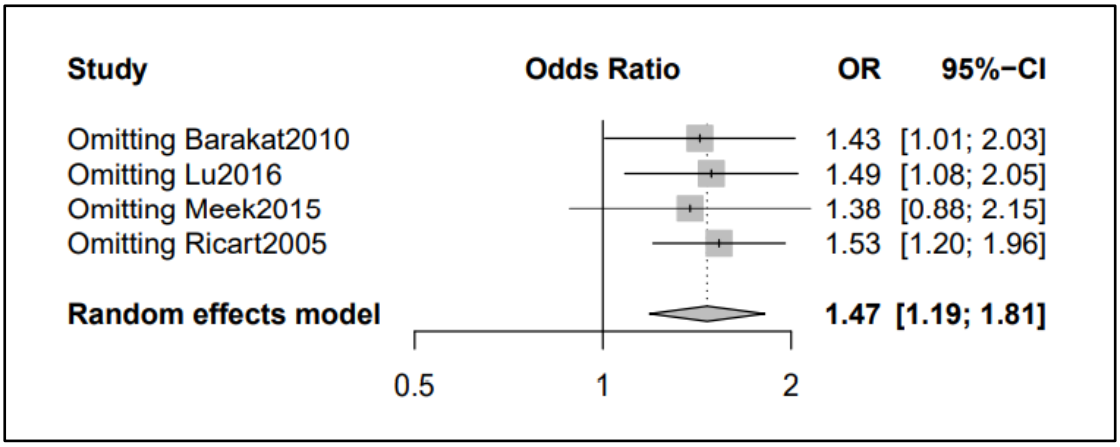

**5.2.4 Preterm delivery**



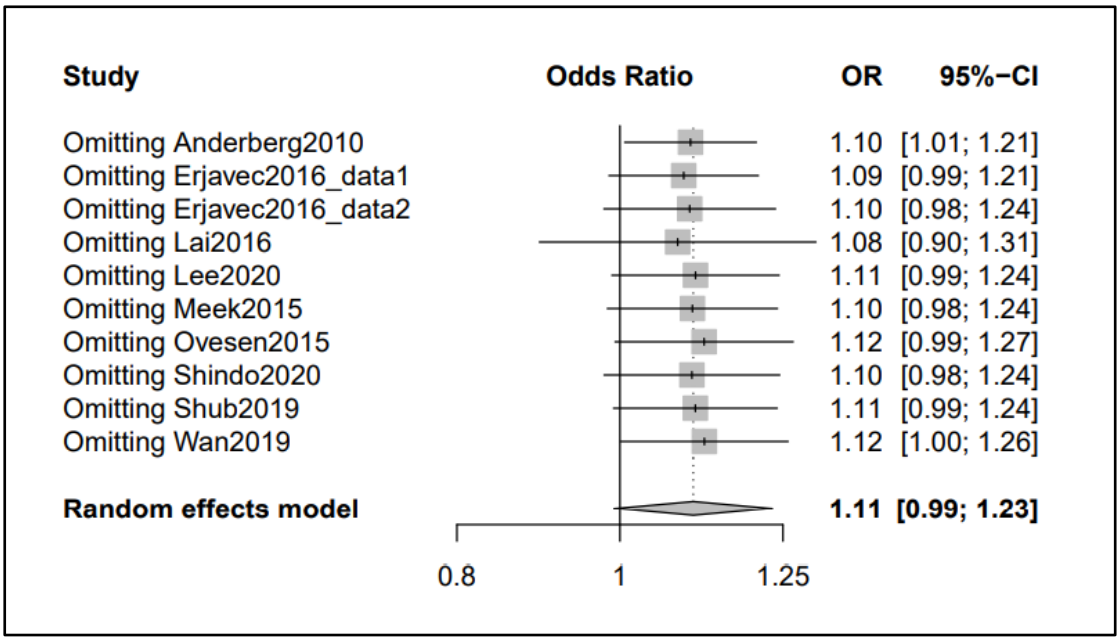
**5.2.5 RDS**



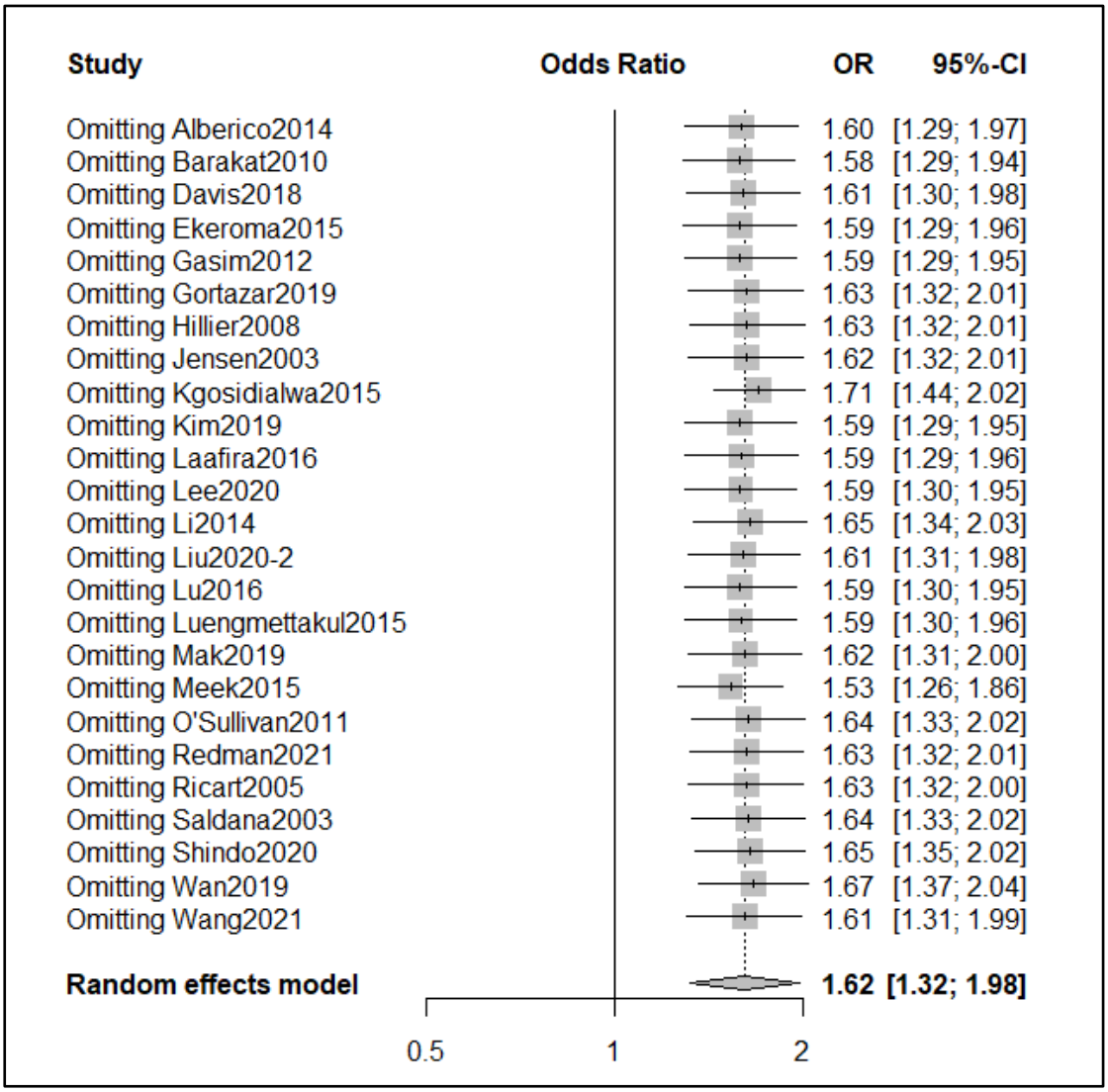

**5.2.6 Low 1-min Apgar score**



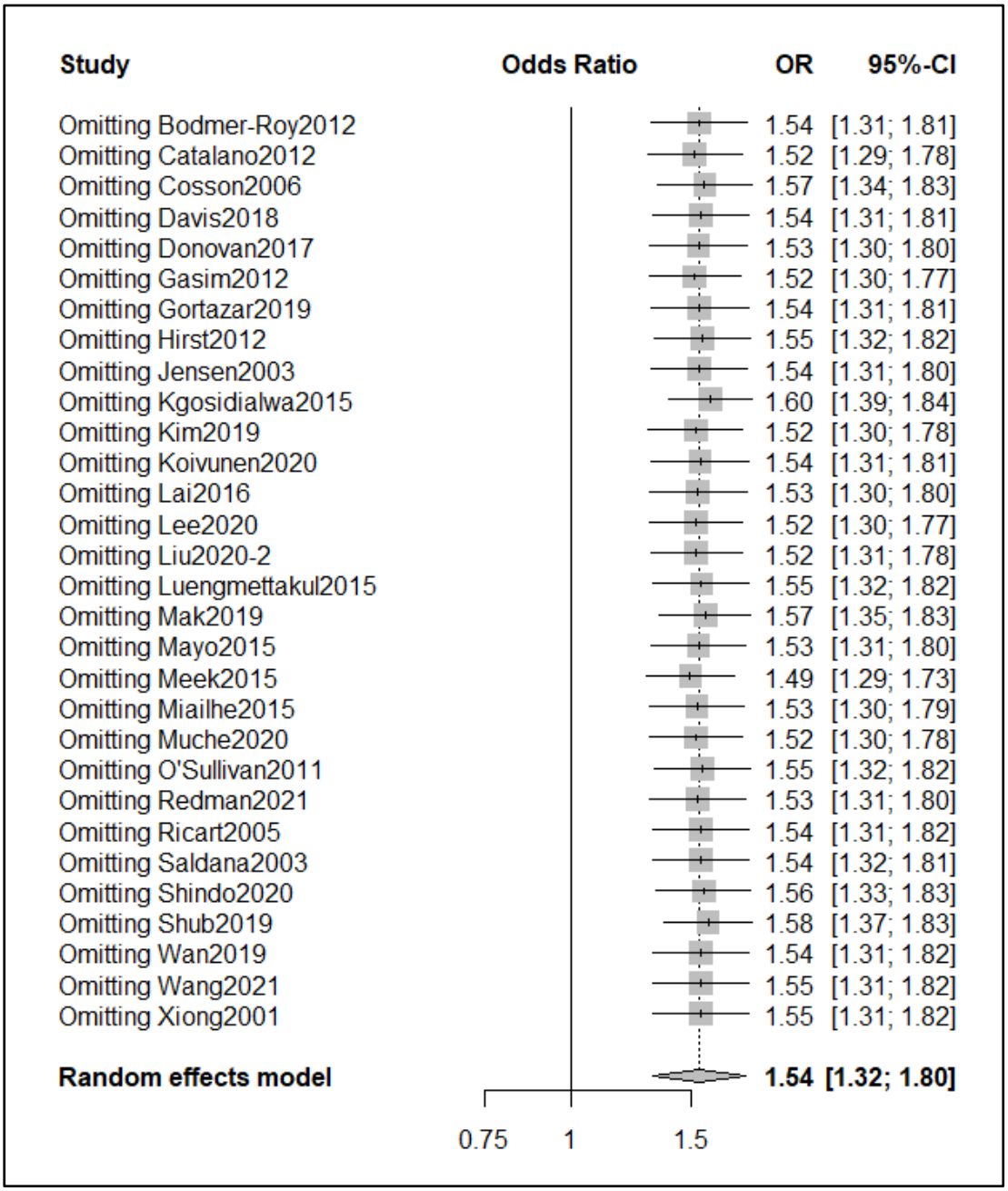

**5.2.7 Low 5-min Apgar score**



**5.2.8 Macrosomia**



**5.2.9 LGA**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Odds Ratio
OR
95%-CI
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Omitting Catalano2012 1.52 [1.29; 1.78]
Omitting Cosson2006 1.57 [1.34; 1.83]
Omitting Davis2018 1.54 [1.31; 1.81]
Omitting Donovan2017 1.53 [1.30; 1.80]
Omitting Gasim2012 1.52 [1.30; 1.77]
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1
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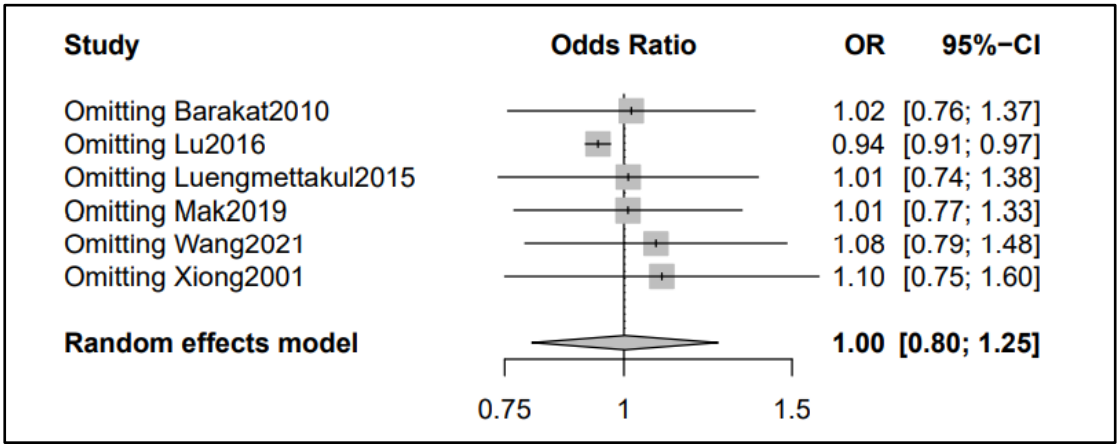
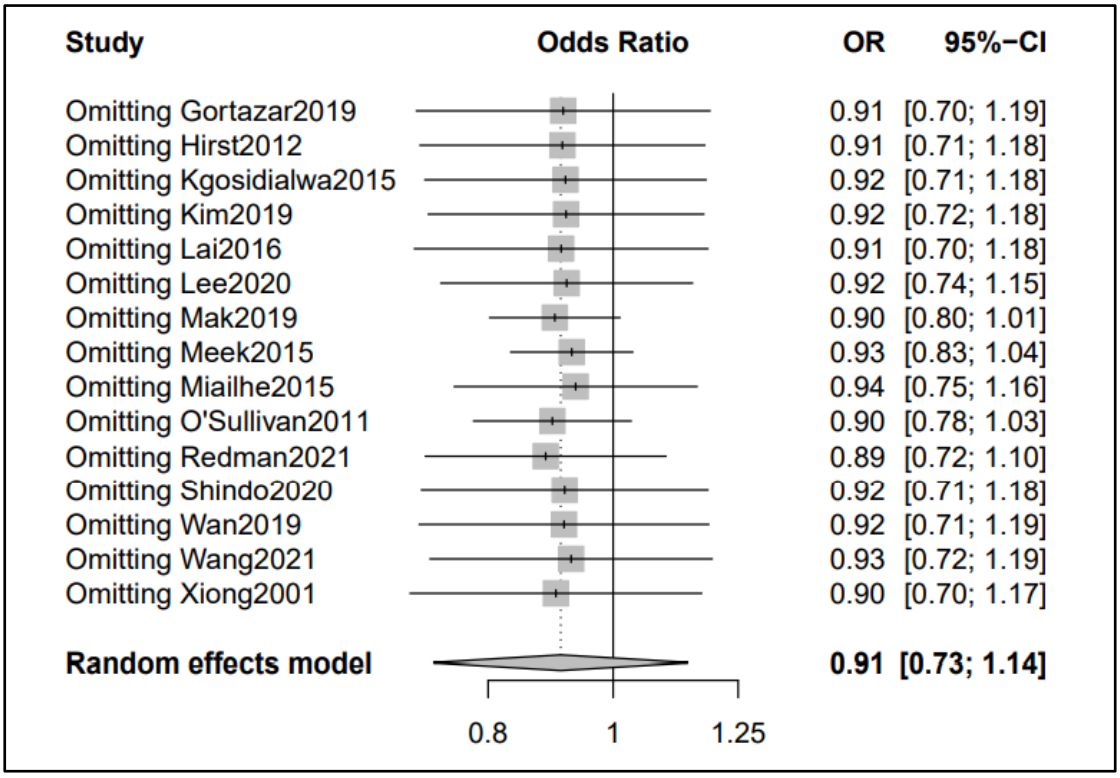
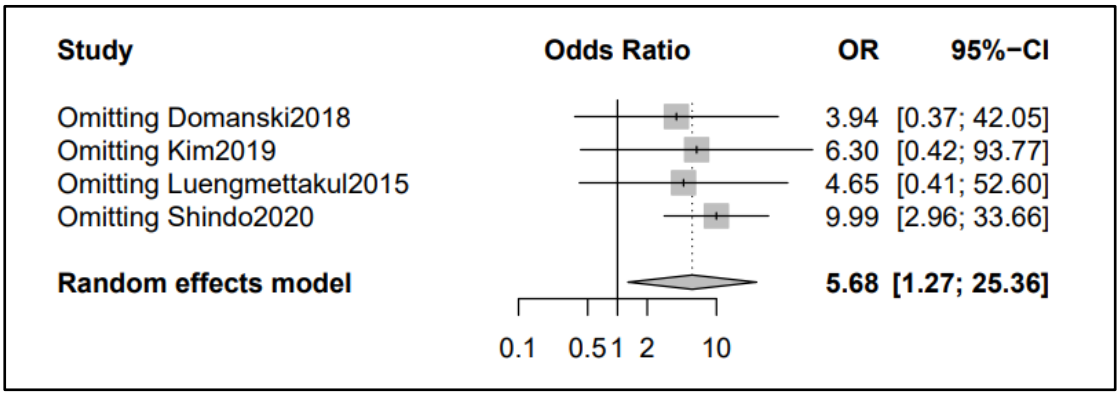
**5.2.10 LBW**



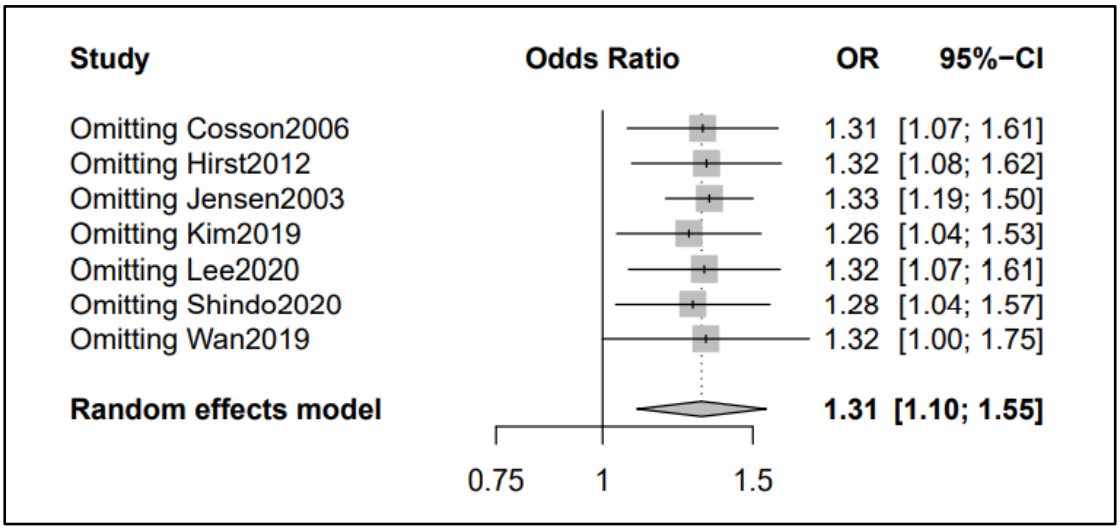

**5.2.11 SGA**



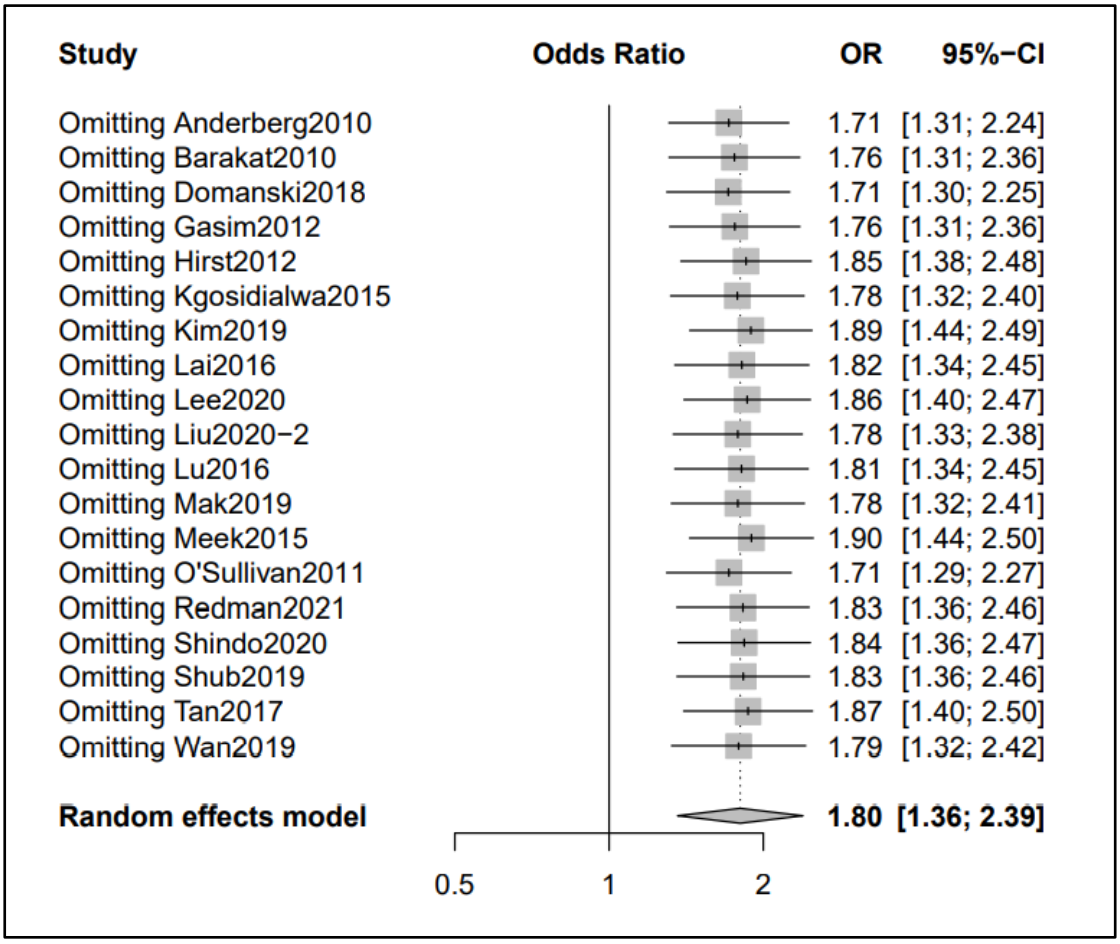

**5.2.12 Neonatal hypoglycemia**



**5.2.13 Neonatal jaundice**




**5.2.14 NICU admission**



**Supplemental Figure S6. Funnel plots**